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CONSEQUENCES OF CHILD MARRIAGE IN INDONESIA

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Consequences of Child Marriage in Indonesia

Executive Summary

Approximately 650 million girls and women alive today were married before their 18th birthday, and if progress is not accelerated, an additional 150 million girls will be married in childhood by 2030 (UNICEF 2019).

Child marriage has, in recent years, become a focus of Indonesian public policy. In September 2019, Indonesia's parliament voted unanimously to raise the legal age of marriage for women from 16 to 19 years, in line with the legal age of marriage for men (House of Representatives of the Republic of Indonesia, 2019). A reduction in rates of child marriage has also been stated as a target of Indonesia's National Mid-term Development Plan (2020-2024) and a National Strategy on the Prevention of Child Marriage has been developed to support clearly defined goals.

These changes are potentially good news for current and future Indonesian children, but the law is yet to be implemented across the nation. The aim of this report is to document the consequences of child marriage for Indonesian girls and boys - as they grow into women and men, for their households and their children – and so contribute to a better understanding of the impact of child marriage and the benefits of implementing policies to assist in reducing its prevalence and its consequences.

We present a review of what is known about the drivers and consequences of child marriage in Indonesia and around the world and then present analysis of data from the Indonesian Family Life Survey (IFLS). The IFLS is a longitudinal, in depth socio-economic and health survey that allows us to follow the lives of a sample of women and men who were married at a young age and report on their social, economic and health outcomes, and those of their children.

We present estimates of the prevalence of child marriage calculated using the IFLS and descriptive statistics showing the difference between those who married at earlier and later ages for variables such as educational attainment, labour force participation, participation in household decision-making, divorce-rates, maternal and child health. We then go on to use statistical analysis to identify the causal impacts of being married at an early age. We also examine the impacts associated with young girls marrying young boys versus the impacts of young girls marrying older men.

Impacts of Child Marriage

We find that that child marriage has significant negative impacts on both women and men and their children. These impacts include lesser educational attainment (for both men and women), women being less likely to work, both men and women being employed in lower-earnings jobs and living in households with lower per capita income. Marriages that involve a young girl marrying an older man are more likely to end up in

divorce than other marriages. Both women and men who marry at an early age indicate that they have lesser involvement in household decision-making.

Child marriage significantly affects women's experience of pregnancy and childbirth and their children's health. Child marriage results in women having their first child more than three years earlier than other women. This results in them having more pregnancies and children. Child marriage reduces the care a woman receives during pregnancy, lessens the likelihood of the woman having a medically-supervised birth and increases the probability of her child dying before the age of 1. Under-5 child mortality is also increased.

Those children who do survive, are more likely to be stunted (low height-for-age) which is known to be associated with other health problems later in life. They also score worse on tests of cognitive ability. Both sons and daughters obtain a lower level of education on average, although it is unclear whether this effect is causal. They are less likely to have a birth certificate which can be needed to access publicly provided services.

Both men and women who marry early report lower overall wellbeing and life satisfaction.

Marriages that involve young girls marrying young boys (often as a result of parental pressure) seem to impose additional burdens as the couple struggles to support a young family with low educational attainment of both spouses. These marriages may however be happier as couples are less likely to divorce than couples where a young girl marries an older man.

Given the negative consequences of child marriage, what can be done to reduce it?

Changing marriage laws

Indonesia has made a good start by legislating to raise the legal age of marriage for women from 16 to 19 years, in line with the legal age of marriage for men. Research however shows that the effects of changes in the legal minimum age of marriage are not as straight forward as one might think. Families may choose not to comply with such laws with this being particularly likely in times of economic hardship. There is also the possibility that the incidence of teenage pregnancy outside marriage will increase.

Hence, in addition to legislative change, policies that assist families in supporting their young people may be needed.

Increasing access to education and training

Decisions about child marriage and education are closely entwined as children normally exit education when they get married. Reducing the parental cost of education has the potential to delay the age of marriage as parents may be more inclined to keep girls (and boys) at school rather than marrying them. This can be done by increasing families' ability to access education, physically though school construction and/or by reducing education costs.

Formal education combined with other educational programs like vocational training or life skills also have the potential to empower young people to make more informed

decisions over their future. Programs that educate young women about sex, reproduction and marriage have also been shown to delay marriage and pregnancy.

Financial Incentives

Programs that have provided economic incentives to families, conditional on the postponement of the marriage of their daughters until after the legal minimum age have been shown to be able to delay the age of marriage and increase educational attainment. Whereas
conditional cash transfers with conditions attached to school enrolment (such as Indonesia's PKH) increase educational attainment but do not appear to be effective in delaying child marriage.

Social Norm Change Campaigns

While economic conditions and education costs play a role in parents' decisions as to whether to marry their children early or not, child marriage is also in large part a cultural phenomenon with families often following the dominant social norm in their communities. The social norm of child marriage can likely be influenced by information campaigns that raise awareness of its consequences and cause people to question that tradition. Governments have a central role to play in any such campaign, with the involvement of traditional leaders and tailoring to local conditions also likely to be important.

And what about those who have already married as children?

In addition to trying to reduce the prevalence of child marriage, governments can develop policies to reduce the negative impacts of child marriage. Policies that assist, rather than prohibit, young married people from attending school can reduce the negative impact of child marriage on educational attainment, and consequently, earnings. Policies that promote information and access to family planning for boys and girls are likely to prevent early and risky pregnancies. Policies that encourage young wives and mothers to attend antenatal check-ups and access a medically-supervised birth would also reduce the negative impact associated with early marriage. Aiding individuals who married early to obtain certification of births (and marriage once they reach the legal age) may also increase the ability of these families to access education, social protection and other programs that can improve their welfare.

Governments thus have a range of tools at their disposal to reduce the prevalence of child marriage and to reduce its consequences. Legislating against child marriage is a good start but is made more effective when complemented by policies that assist families to educate, rather than marry, their young daughters and sons. Policies to reduce child marriage need to consider the economic role of marriage and the crucial role of cultural norms. Information campaigns are vital for success. Greater community awareness of the consequences and costs, especially long-term costs, of child marriage is a key and necessary component of any concerted effort to change cultural norms around marriage for the benefit of individuals, families and society.

Consequences of Child Marriage in Indonesia

Background

> *Approximately 650 million girls and women alive today were married before their 18th birthday, and if progress is not accelerated, an additional 150 million girls will be married in childhood by 2030 (UNICEF 2019).*

Child marriage has, in recent years, become a focus of Indonesian public policy. In September 2019, Indonesia's parliament voted unanimously to raise the legal age of marriage for women from 16 to 19 years, in line with the legal age of marriage for men (House of Representatives of the Republic of Indonesia, 2019). A reduction in rates of child marriage has also been stated as a target of Indonesia's National Mid-term Development Plan (2020-2024) and a National Strategy on the Prevention of Child Marriage has been developed to support clearly defined goals.

These changes are good news for current and future Indonesian children, but many Indonesian women and (to a lesser extent) men are living with the consequences of having been married at a young age. For these people, the impact of being marriage as a child will persist into adulthood and continue to shape many aspects of their lives. This study assesses the extent of such consequences. Where some studies have measured the rate of child marriage (BPS 2016, Ramble et al., 2018) and shorter-term impacts, this study considers the stock of people that are already affected and examines how child marriage affects many aspects of people's lives over the entire lifecycle.[1]

We begin with a review of the existing research literature which examines the drivers and consequences of child marriage. We then discuss the characteristics of the data set used – the Indonesian Family Life Survey (IFLS). The IFLS is a high quality, longitudinal socioeconomic and health survey which allows us to follow the lives of a sample of women and men who were married at a young age and report on their social, economic and health outcomes, and those of their children. We present estimates of the prevalence of child marriage calculated using the IFLS and present descriptive statistics showing the difference between those who married at earlier and later ages for variables such as educational attainment, labour force participation, participation in household decision-making, divorce-rates, maternal and child health. We then go on to discuss the methodology we use to more carefully identify the impact of being married at an early age. We discuss the results of these analyses, then draw conclusions and policy implications. In the context of this report and Indonesian law, marriage as a child means marriage before the age of 19, unless otherwise specified.

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[1] This study differs from recent studies that have examined the impacts of child marriage on those currently aged 20-24 years (BPS, 2017; UNICEF 2016, BPS, 2020) by examining the impacts over a longer time frame so as to be able to assess longer term impacts.

What do we know about child marriage in Indonesia and internationally?

Drivers of Child Marriage

There are a number of studies that examine the drivers of child marriage. In the context of Indonesia, reports by UNICEF and the Indonesian Statistical Agency (BPS, 2016 and 2019) uses the 2010 Population Census to calculate prevalence rates at the sub-district level in that year and the National Socio-Economic Survey (SUSENAS) from 2008 to 2018 to examine young married women (20 to 24) who were married before the age of 18. They find that 11.2 percent of women aged 20 to 24 in 2018 had been married before the age of 18. This amounts to more than a million women, approximately 60,000 of whom were married before the age of 15. They also examine changes in prevalence between 2008 and 2018, finding evidence of some change - the prevalence of child marriage decreased by 3.5 percentage points. The prevalence of very early marriage (before the age of 15) however halved over this period. They find that child marriage is associated with lower education levels, rural residence, and lower socio-economic status. Consistent with the UNICEF report, Rumble et al. (2018) use Demographic and Health Survey (DHS) data and find that in Indonesia education and wealth have protective effects for early marriage, while rural residence is a risk factor. They also find that media exposure protects against early marriage. They find significant variation by region and suggest that this is indicative of religious, ethnic and other geographically diverse factors playing an important role.

The finding from these studies on Indonesia - that lower socio-economic status is associated with higher prevalence of child marriage - is consistent with the international literature. Several studies examine the extent to which lower socio-economic status and poverty drive child marriage. Corno and Voena (2016) examine the effect of poverty on child marriage using data from rural Tanzania. They find that decreases in household income as a result of unexpectedly poor rainfall result in an increased probability that daughters get married at an early age. When hit by an adverse income shock of this type, marrying a daughter reduces the demand on household resources. They find that the probability of child marriage is even larger in areas where bride prices are part of cultural customs as this is an additional financial incentive to marry daughters when times are tough. They find that credit-constrained parents rely heavily on child marriage and bride price payments to smooth consumption. In a companion paper, Corno et al (forthcoming) study how aggregate economic conditions affect the time of marriage more generally across Sub-Saharan Africa and in India. Using income variation from droughts, they show that a reduction of 4 to 5% in aggregate income has opposite effects in the two regions. In Sub-Saharan Africa where the customary tradition is that the groom makes a payment to the bride's family at the time of marriage (bride price), the reduction in income increases the annual hazard of child marriage by 3%. In contrast, in India where the payment is the other way around, from the bride to the groom's family (dowry), child marriage is reduced by 4%. When aggregate income is low and households want to maintain consumption levels, households prefer to bring forward daughters' marriages when bride price is paid but delay these marriages when dowries are paid.

Adams and Andrew (2019) study the relationship between education and child marriage. This is complex as these decisions are often made simultaneously. Observed age of

marriage and education reflect not only preferences of the brides and/or their-families but also of the grooms. They use a set of experiments to elicit beliefs and preferences in rural India and present data on parents' preferences over their daughter's age of marriage, completed education, marriage match quality and their beliefs about how the quality of marriage matches change with girls' education and age. They find that parents prefer delaying daughter's marriage until the age of 18 (legal age in India) but not further and prefer their daughters to finish high school. They also believe that more education increases the chance of getting a better-quality groom. However, parents also believe that girls' marriage prospects start to worsen with age as soon as girls leave formal education. This implies that economic shocks that affect the probability of girls attending school are a risk factor for child marriage.

The effect of increased access to education for girls on educational attainment, fertility and labour market outcomes has been widely studied in Indonesia. Several authors have found significant effects of the government school construction program (*Inpres Sekolah*) undertaken in the 1970s on men's education but no effect on women's education (Duflo, 2001; Breierova and Duflo, 2004; and Hertz and Jayasundera, 2007). A second, recent round of related research explores why there is no effect on women's educational attainment. Zha (2019) confirms that the school construction program in densely populated regions did not have an effect on primary education for women but it had a negative effect on their secondary school attainment. She shows that a consequence of this decrease in girl's educational attainment is that girls married at an earlier age and the spousal age gap increased.[2] This implies that one would expect that increases in girls' educational attainment would lead to an increase in the age of marriage.[3]

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2 The author explains the negative effect on secondary education, especially in densely populated areas, as being due to the program resulting in a crowding out of resources for secondary schools that left them under resourced and decreased their quality. No differences were found for women's primary or secondary schooling in the sparsely populated regions. A reduction in women's educational attainment by 10 percentage points decreased the age of first marriage for girls by 1.1 years and increased the spousal age gap by 0.35 years.

3 A second paper on the school construction program, Ashraf et al (2020) shows that it had a positive effect on girls' education among ethnic groups in which bride price is practised. In the bride price ethnic groups (e.g. Banggai, Gorontalo, Manobo, Tomini), reducing the cost of education (by, for example, building more schools) leads to an increase in girls' education if the bride price compensates for it. They find that the bride price increases with education. Completing primary school is associated with a 58% increase in the bride price, completing junior high school is associated with a further 67% increase and attending college with another 86% increase. The authors report that adding one school for every 1000 school-aged children increases girls' primary school completion rates by 2.5 percentage points in the ethnic groups that traditionally practice bride price. No effect was found for ethnic groups where this custom is not practiced. The authors do not look at the age of first marriage but we infer, based on the evidence from Corno & Voena (2016), that it is likely to also lead to an increase in the age of first marriage. The authors also present evidence of this for Zambia where there is also heterogeneity in the bride price custom. The results are similar with building an additional school per square kilometre increasing girls' primary school completion rates by 4.2 percentage points in the ethnic groups that traditionally practice bride price, with no effects for those who do not practice this custom.

Consequences of Child Marriage

We now turn to examining the literature on the consequences of child marriage. Using Demographic Health Survey data from 35 countries, Jensen & Thornton (2003) used cohort analysis to study the trends and consequences of child marriage across different regions of the world. They report correlations showing that women who marry young tend to have less education, begin childrearing earlier, have less decision-making power in the household and are more likely to experience domestic violence. Child marriage has an almost mechanical effect on women's fertility generating a cascade of negative effects. As reported by Mayor (2004) complications in pregnancy and delivery are a leading cause of death among girls aged 15-19. Marrying early has also been shown to be associated with worse mental health. John et al (2019) find a significant negative association between very early marriage (marriage at 15years or earlier) and overall psychological well-being using cross sectional data from ever-married women in Niger and Ethiopia. Except for self-control, all sub-domains of psychological well-being – depression, anxiety, positive well-being, vitality and general health – were negatively associated with very early marriage. Their qualitative analysis reveals that child brides reported suffering emotional distress and depression induced by the burden of handling marital responsibilities at an early age. Indonesia-specific analysis has been conducted by BPS (2017) using data from SUSENAS 2013 and 2015 and the 2015 intercensal survey (SUPAS); by BPS (2016) using the 2010 Population Census and SUSENAS 2008 to 2013 and 2015 and recently extended to include SUSENAS 2017 and 2018 in BPS (2020). These studies find negative associations between child marriage and educational attainment, access to social protection, the probability of birth with a skilled birth attendant and breastfeeding. They report that women who marry at an early age are more likely to be divorced by the age 20 to 24, more likely to work in the agriculture sector and hold informal jobs.

Looking at the consequences for the children of young mothers, Fall et al. (2015) examined associations between maternal age and the outcomes of their offspring using five birth cohorts from Brazil, Guatemala, India, the Philippines and South Africa. Compared to offspring of mothers aged 20-24, offspring of mothers under the age of 19 had lower birthweight and a greater likelihood of pre-term birth, stunting by two years of age and failure to complete secondary schooling. They did not find associations with the offspring's health in adulthood. In a subsequent study using 16 national and sub-national cross-sectional surveys across sub-Saharan Africa conducted between 2010 and 2014, Efevbera et al. (2017) find that children born to women who married before the age of 18 were more likely to be stunted and off-track for development. However, once they control for other confounders, there was no effect of child marriage. This indicates that in many cases it is not clear if child marriage directly impacts offspring's outcomes or if it is all the other characteristics of the mother, like low education, poverty and so on, that cause the poor outcomes in their children.

Most of this evidence reflects associations between child marriage and life outcomes and does not directly determine whether child marriage *causes* these outcomes. The impact of child marriage is entangled with the effects of other confounding variables, such as poverty, that are likely to lead to poor outcomes even in the absence of child marriage. There are a few studies that have gone beyond an associational analysis. Field and Ambrus (2008) use data from rural Bangladesh between 1996 to 2001 to evaluate the effects of child marriage on education. In Bangladesh, girls tend to get married once they reach puberty.

Therefore, those who reach puberty later are likely to get married later too and to stay at school. Field and Ambrus use the age of menarche to estimate the probability of an early marriage and then present the effect of early marriage on education and health services utilisation.[4] They find that for each additional year that marriage is delayed, girls gain 0.22 additional years of schooling and are 5.6 percent more likely to be literate. Delayed marriage is also associated with an increase in the use of preventative health services like prenatal care, the number of antenatal visits and receiving tetanus vaccination.

The effect of child marriage on Intimate Partner Violence (IPV) and mental health status for women has been studied using fixed effects methods (which allow you to make stronger causal statements).[5] Yount et al. (2017) looks at the effect of early marriage on IPV in Bangladesh using panel data from 2013 and 2014. They find a negative effect on physical IPV for women who married before the age of 18, and the risk of IPV is even stronger for those who were married before the age of 15. They also find that in villages where the prevalence of child marriage was high, the protective effect of marrying later was offset by a backlash aimed at women who moved away from the cultural norms. Jayawardana (2019) looks at the effect of child marriage on mental health for women in Indonesia using data from the IFLS. She finds that marrying early, particularly by the age of 18 years, has a strong negative effect on women's mental health. Specifically, they are 10.6 percentage points more likely to be depressed and 6.8 percentage points more likely to be affected by severe depressive symptoms.[6]

Moving to the effects of child marriage on the children of early married women, we find three studies that provide some evidence of effects on health and education. Using a similar strategy to Field and Ambrus, Sekhri and Debnath (2014) and Chari et al. (2017) evaluate the intergenerational consequences of child marriage in India. Asadullah et al. (2016) does the same in in Bangladesh. Sekhri and Debnath (2014) use population representative cross-sectional data from 2005 in India and find that children of women who got married later perform significantly better on arithmetic and reading tasks. They present suggestive evidence that the mother's greater level of education has an additional effect on children's cognitive skills. Chari et al. (2017), using the same data, find that a one-year delay in the mother's marriage increases the probability of her child completing the recommended vaccinations, the probability of school enrolment, the child's weight-for-height z-score and his/her reading and mathematics test scores. They also explore the channels that lead to these outcomes, finding that the negative effect of child marriage on children's education and health outcomes persists even after isolating the effect of education and the age of the early marriage itself (i.e. the age the women enters the spousal household matters directly as younger women would be less likely to advocate for their preferences). Asadullah et al (2016), using household survey data from some of the poorest districts of Bangladesh, obtain similar results finding a negative effect of mother's

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4 The rationale behind using age of menarche is that it is independent of the parents' characteristics as a physiological trait intrinsic to the girl and therefore is independent of other factors like poverty that may affect their risk of marriage. It is arguable that girls from more well-off families are likely to have better nutrition and to experience menarche later. In subsequent research using this strategy, as we will discuss later, controlling for nutritional characteristics of the mother during childhood addresses this potential concern.

5 This is a similar strategy to the one we will use in this report and will be fully explained in the methods section.

6 We are however unable to replicate this results in our analysis below.

early marriage on own schooling as well as children's cognitive outcomes. In addition, they find that the effect is larger for daughters.

In summary, the existing evidence from around the world suggests that early marriage has negative consequences for women's physical, reproductive and mental health, their marital stability, level of education and quality of employment. It also has negative consequences for children's health, development and education.

Our contribution

The bulk of research on the consequences of child marriage has been focused on India and Bangladesh with there being little research on countries in South East Asia, including Indonesia. Further, with the exception of the small number of studies discussed above, the majority of studies examine associations between child marriage and various outcomes but are unable to establish that child marriage caused these outcomes. In this report we focus on Indonesia and use statistical techniques to move from the well-established associations between child marriage and life outcomes to causal estimates i.e. the impact of child marriage on women's lives and on their children. A further important contribution is that we also examine the consequences for men who marry early. There is very limited evidence on the consequences of early marriage for boys, even though it is estimated that its prevalence internationally ranges from 1 to nearly 30% with an average of 4.5%, Murray Gastón et al (2019). The prevalence in Indonesia is around 3.7%.[7] A final important contribution is that as we have information on the age of both the wife and the husband, we can look at the effect of child marriage when girls marry older men, compared to when they marry similar underaged boys.

Data

The Indonesia Family Life Survey is a longitudinal socioeconomic and health survey. The first wave of the survey was conducted in 1993 and provides information on around 30 000 individuals – and covers provinces which were representative of about 83% of the Indonesian population at that time. The data includes a wide range of information on individual respondents, their families, their households, the communities in which they live, and the health and education facilities they use (Strauss, Witoelar and Sikoki, 2016).

The IFLS currently consists of five waves with surveys being conducted in 1993, 1997, 2000, 2007 and 2014 (Figure 1). It collects information on the original households that were surveyed in 1993 and new households that are formed when members of the original households move out to form their own households. Approximately 87 per cent of IFLS1 households were re-interviewed across all survey waves (or died).

An additional survey – IFLS-East - was conducted in 2012 to survey 2,547 households in Indonesia's eastern provinces, which were not represented in the original 1993 sample. We include these data in the analyses.

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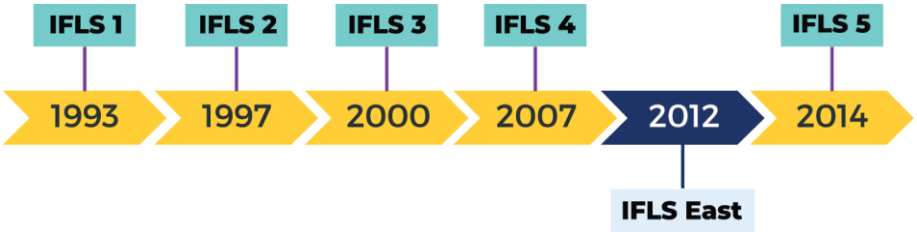
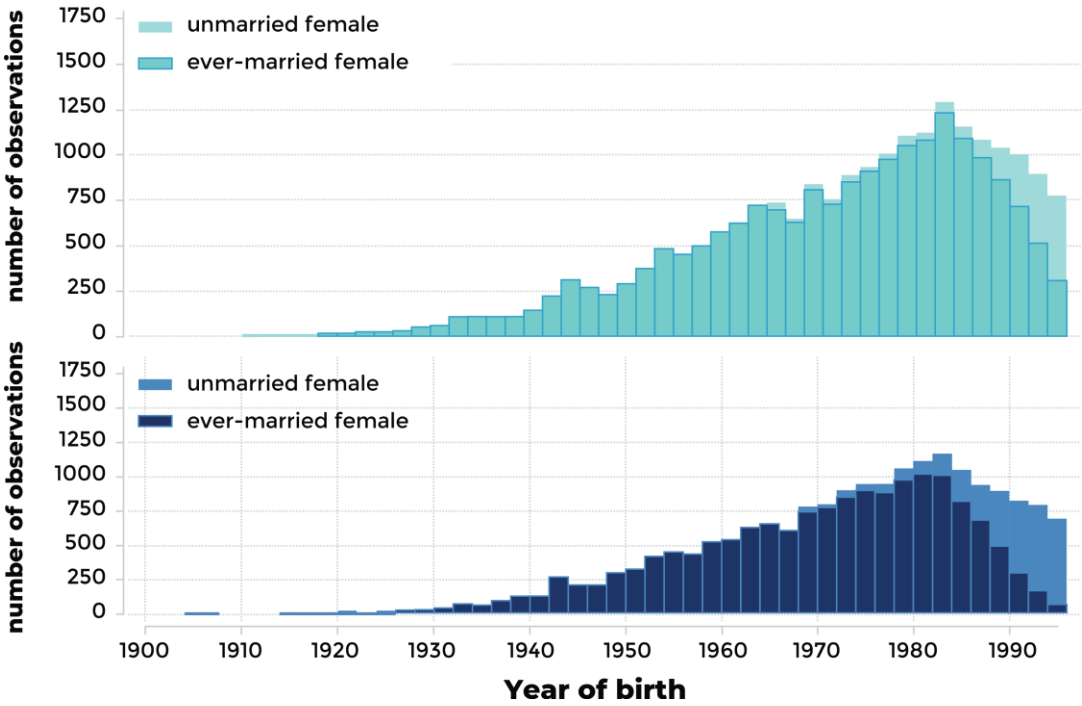
7 Author calculations based on males aged 20-24 in the IFLS-5 and IFLS-East.

Figure 1: Indonesian Family Life Survey



The final analysis sample was limited to respondents who participated in the IFLS5 and IFLS-East rounds and were 19 or over at the time. We restrict the sample to those aged 19 and over at the time of these surveys so that the prevalence of child marriage calculated uses the broadest and most recent data available and is not biased downwards by the inclusion of children who might still potentially get married early, or upwards through the inclusion of those from earlier waves who were no longer alive and representative of the population. Where IFLS5 individuals participated in earlier waves, their earlier responses were used in analyses of life trajectories. The final, cleaned dataset includes around 40,800 unique respondents. Figure 2 shows the distribution of the final sample across birth years, by gender and marital status.

Figure 2: Final sample, by year of birth



In high-level prevalence data, cross-sectional sample weights were used to weight the sample to be representative of the provincial populations at the time of the survey (Strauss et al, 2016). Sample weights were not used for analysis of subsamples of data or the statistical analysis. This is a standard approach in econometric analysis that reduces the number of potential sources of inaccuracy.

Descriptive Statistics

Prevalence and Drivers of Child Marriage

Child marriage affects Indonesian women and men across all religions, ethnicities, regions and socioeconomic levels. Around 29 per cent of women who were alive in Indonesia in 2012/2014 were married before the age of 19, and around 23 per cent were married before the age of 18. These figures are in line with the findings of the 2016 UNICEF report using the 2010 Population Census and SUSENAS from 2013 and 2015, (BPS, 2016). Around one in 12 Indonesian men (8.4 per cent) were married under the age of 19.[8]

Figure 3 reports the prevalence of child marriage by province separately for women and men (these data are presented in table form in Appendix A). There is significant variation across provinces, ranging from around 11 per cent of women in Yogyakarta, to over 40 per cent in Sulawesi Tenggara. The prevalence of child marriage is significantly higher for women than for men across all provinces. Many provinces have more than 30% of women reporting they were married before age 19. This includes most of Java (with the exception of Jakarta and Yogyakarta), Sulawesi Tenggara, South Kalimantan, East Kalimantan, Papua, West Papua, Lampung and South Sumatra. (Note that the IFLS does not include data on all provinces, so those for which there are no data are shown in grey on the maps.) Four provinces – Sulawesi Tenggara, Papua, West Papua and Maluku – have rates of male child marriage at or above 10 per cent. The prevalence of early marriage among both females and males is significantly greater in rural areas (37% female, 12% male) than in urban areas (23% female, 3.5% male). Collectively, these figures imply that over 38 million women and 11 million men who are alive in Indonesia today were married before they reached the age of 19 years (World Bank, 2020).

8 Note that this value is higher than the one reported above as the age of reference there was marriage under the age of 18.

Figure 3: Proportion women married before 19 years of age, by province

Women

Men

Source: IFLS East (2012) and IFLS 5 (2014) surveys, weighted.

Early marriage is more common in rural areas than in urban areas for both men and women (Figure 4). Around 34 per cent of the sample of women in rural areas were married at a young age, compared with only 23 per cent in urban areas. Rural status appears to be an important factor in the prevalence of early marriage among the sample. For this reason, some of the statistics reported in this section are considered separately for both urban and rural areas.

Figure 4: Child marriage is more common in rural areas

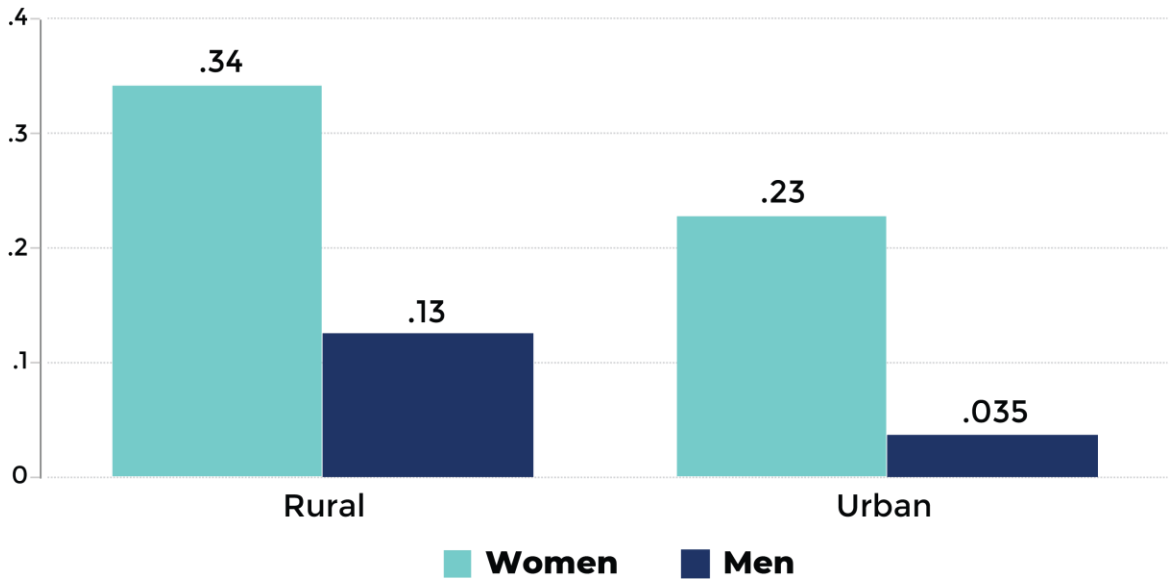


Figure 5: Child marriage affects women and men of all religions

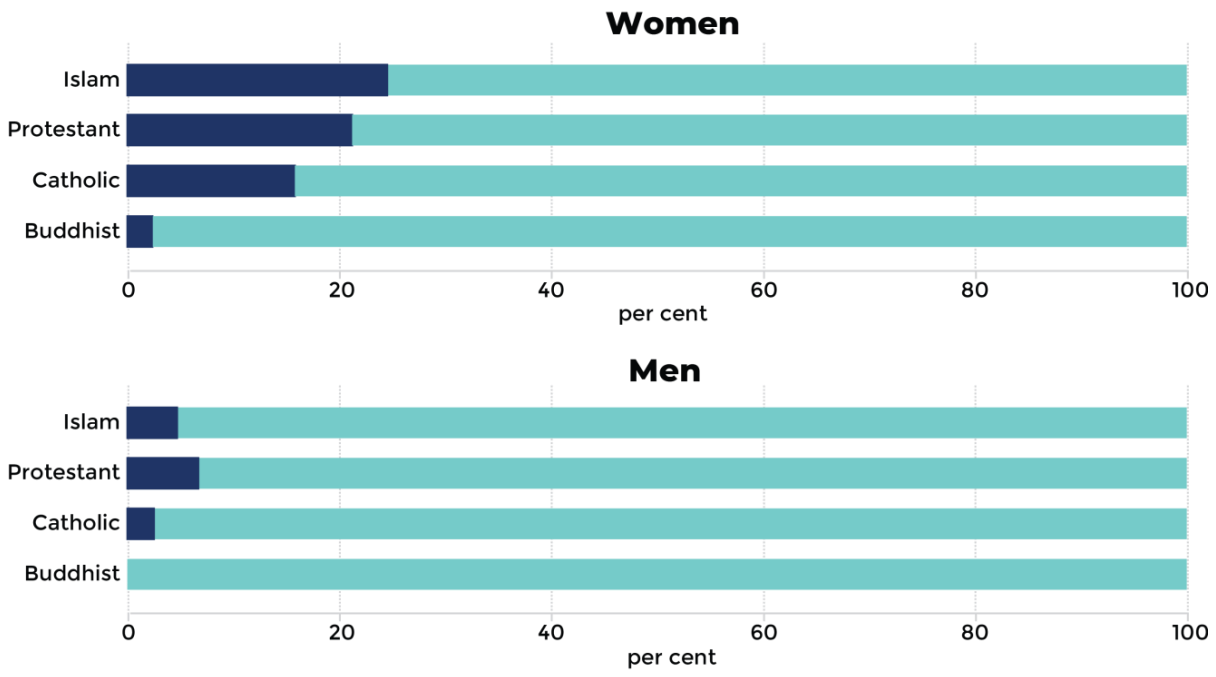
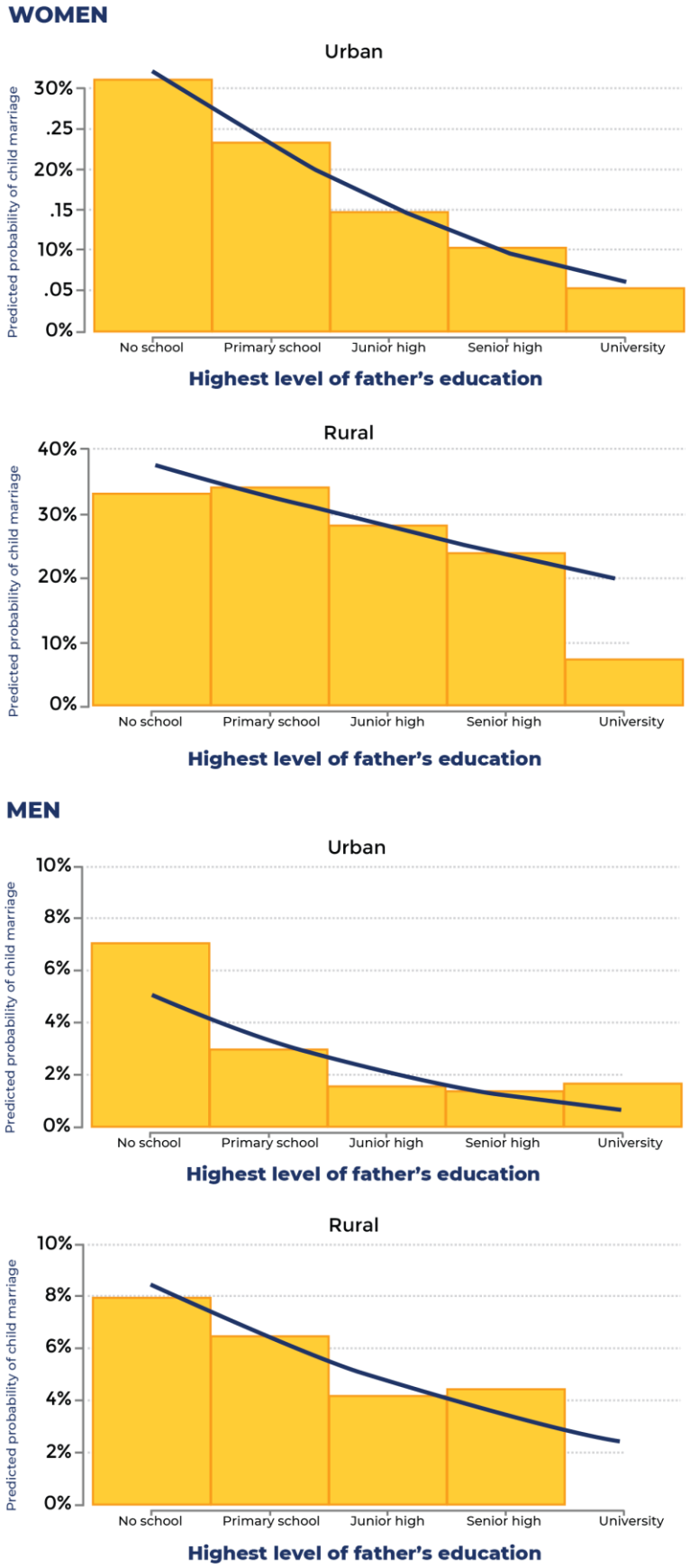


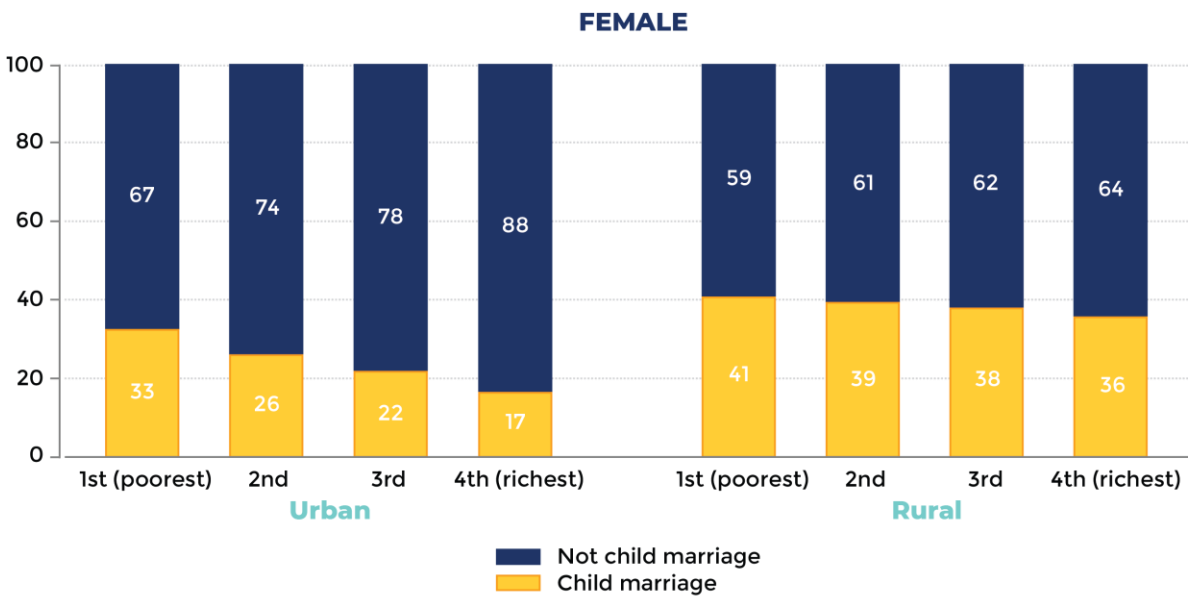
Figure 6: Probability of female child marriage, by father's education

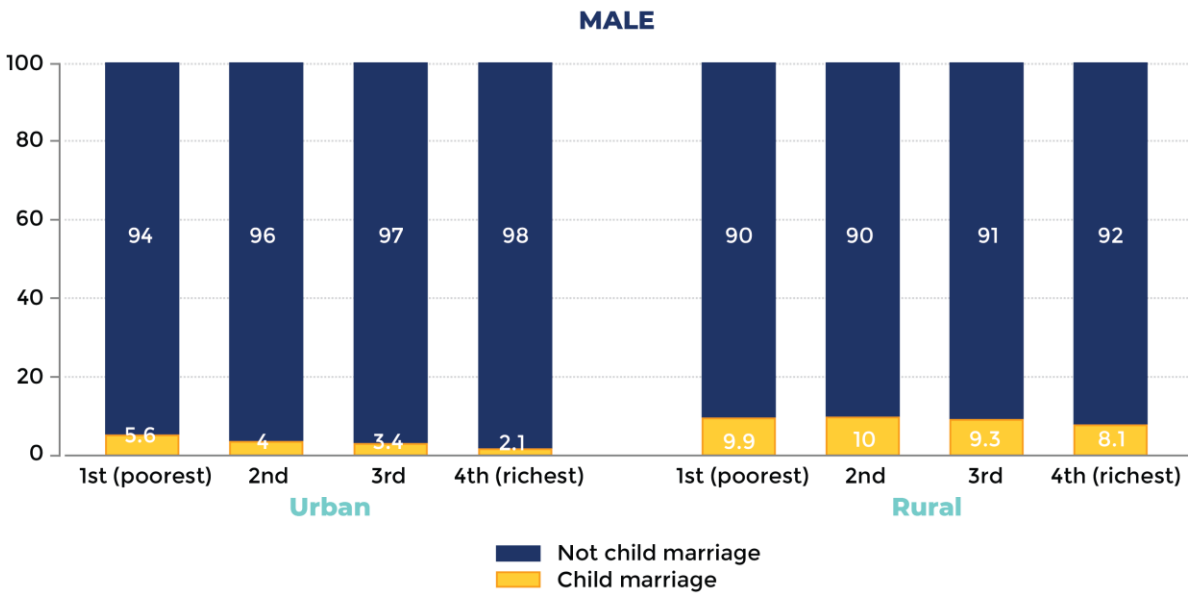


Child marriage occurs in all religious groups, with prevalence being highest among Muslim families (Figure 5).

As discussed above, child marriage is often associated with poverty. This is generally true both between countries (countries with low GDPs tend to have a higher prevalence of child marriage), and within countries (household with relatively low income tend to have higher rates of child marriage), BPS (2016). Our data indicate that Indonesia is no exception to this. Figure 6 shows a strong negative relationship between paternal education and the predicted probability of being a child bride. Figure 7 shows a similar negative relationship between household consumption and child marriage. It shows that prevalence of child marriage decreases with household per capita consumption in both urban and rural areas, and for both males and females.

Figure 7: Percentage child marriage, by consumption quartile

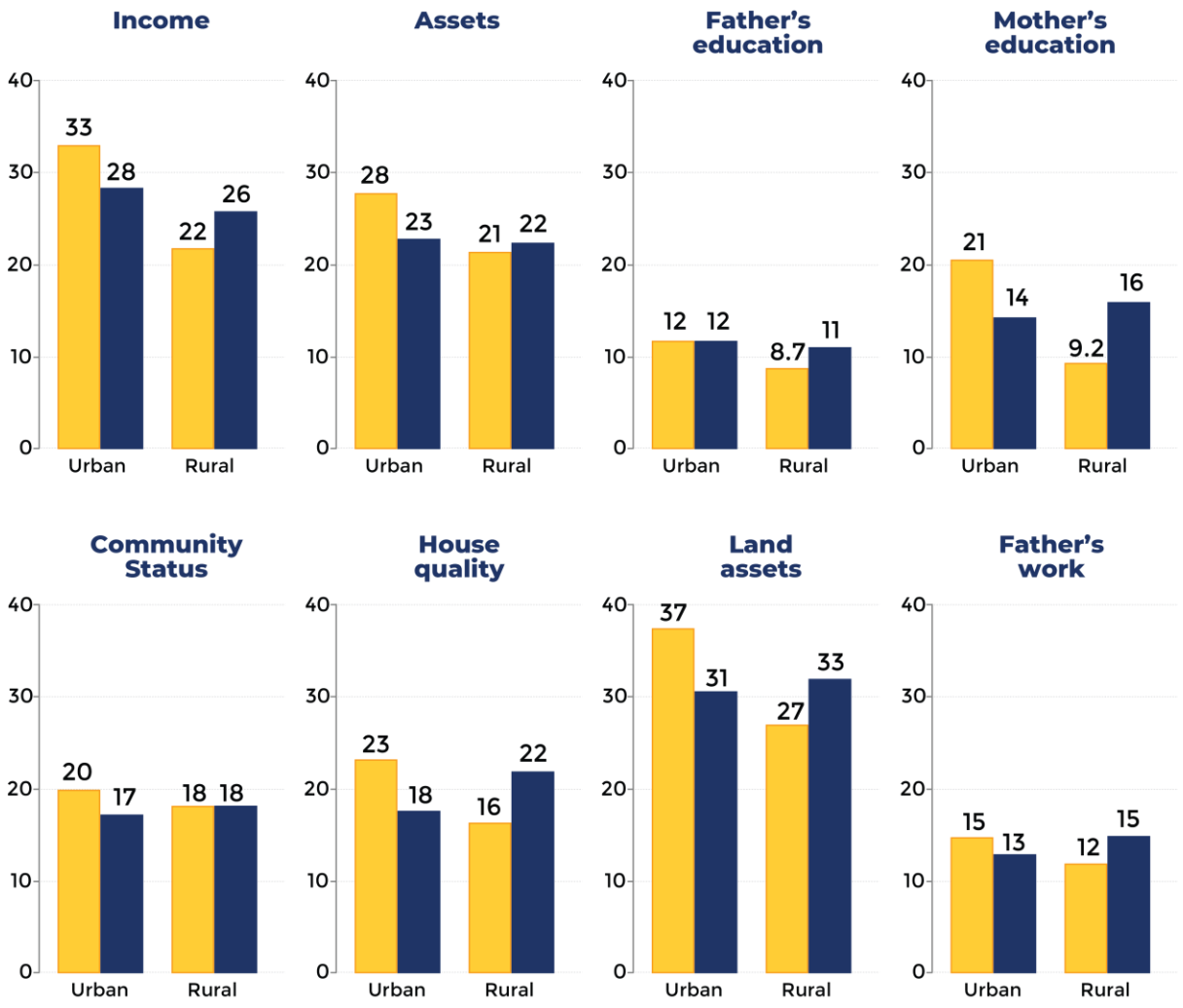




Without accounting for any other factors, the correlation between household consumption and child marriage appears to be stronger in urban areas than in rural areas. In urban areas, for example, a woman in the poorest consumption quartile is nearly twice as likely to have married early as a woman in the richest consumption quartile (a difference of 16 percentage points). By comparison, a woman in the poorest consumption quartile in a rural area is only around 14% (5 percentage points) more likely to be married early than her richest counterpart. Note also that a woman in the richest quartile in a rural area is more likely to be married early than even a woman in the poorest quartile in an urban area.

These trends are similar among men. In urban areas, a male in the poorest consumption quartile is more than twice as likely to be married early compared with a rich male, however the trend is less strong in rural areas. As with women, a rich rural male is more likely to marry early than even a poor urban male.

Figure 8: Proportion whose parents-in-law were better off



Patterns in 'marrying up' provide an additional way to gain insight into the role of wealth and socioeconomic status in child marriage. We use 'marrying up' to refer to the case where the families are looking to marry their children to a family that is better off. The IFLS asks men and women if their parents-in-law were better off than their own parents in a variety of areas, including wealth, education and socioeconomic status (Figure 8). Women's

responses indicated early marriage increased the likelihood of 'marrying up' in urban areas but decreased the likelihood in rural areas. Notably, there is no category in which a majority of women 'marry up'.

Associations between Child Marriage and Outcomes

Having provided some context by examining the prevalence and drivers of child marriage, we now move to the main focus of the report and examine the outcomes of early marriage. The variables examined here are those which we are going to examine in more detail in the statistical analysis. The descriptive statistics we present in this section are associations rather than causal relationships.

Educational attainment. There is a stark difference in the educational attainment of those who were married at an early age compared with those who weren't. Men and women in urban areas who were married before the age of 19 have an average of around four years less education than those who were married later (Figure 9). In rural areas, men and women who married early have an average of around three less years of education than those who did not. Figure 10 illustrates the cumulative probability of being in school, by age and sex, for the sample population. Notably, there is little difference between boys and girls. Only three out of every ten Indonesians (male and female) who married early were still attending school at the age of 15. By the age of 19, less than two per 100 girls (four per 100 boys) who married early were still in education.

The fact that even at very young ages (before they are likely to be married) those who end up being married under the age of 19 are less likely to be in school suggests that education may be a driver of child marriage, rather than or in addition to, a consequence. It is difficult to disentangle the causal relationships. It may be that, for example, girls are not sent to school because there is an expectation that they will be married at an early age with their main duties being in the home and hence education is not seen as a worthwhile investment. We will be able to examine these issues in more detail in the statistical analysis.

Figure 9: Years of education

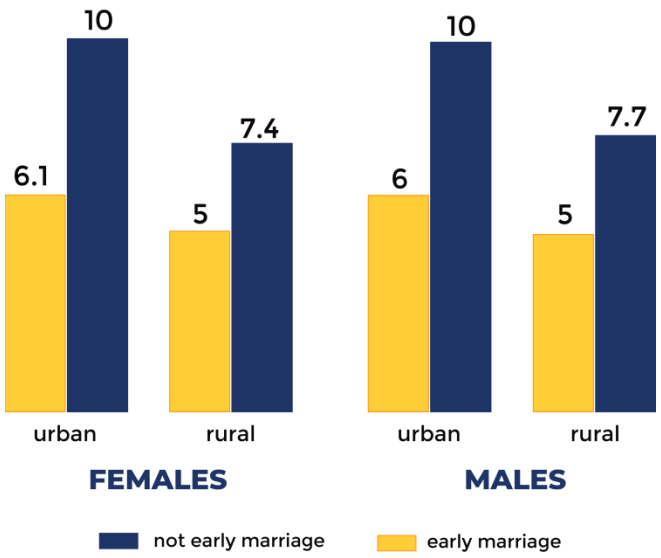
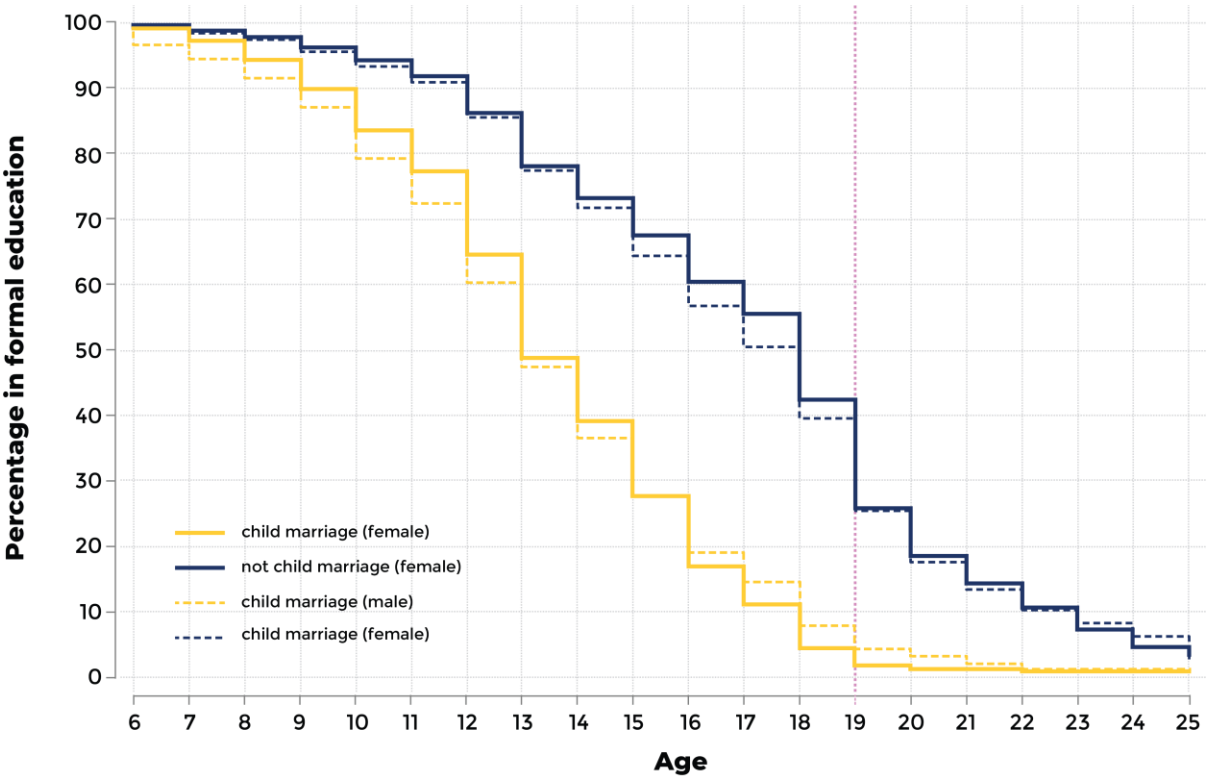


Figure 10: Probability of being in school



Labour force participation and employment. Labour force participation (LFP) is often considered to play a role in women's empowerment. Access to the labour market may affect other facets of the gender divide—for example, female political representation may increase, women may have greater influence on household decisions, and women may become less accepting of spousal violence (Cameron et al., 2019).

Figure 11 reports the predicted level of LFP by age, estimated using cross-section data on women of various ages. Women who were married early have lower labour force participation up until their mid-20s. This may be due to having children at a younger average age (Figure 16). Between the ages of 30 and 60 there is not a discernible difference between the LFP of women who married early and those who did not.[9]

LFP measures basic participation but does not account for variation in the quality of work. Many aspects of work quality are unobservable, however some job characteristics – for example job security, access to sick leave or a regular wage – are affected by employment sector (Figure 12) and industry (Figure 13). Women and men who married early are less likely to be wage workers and more likely to be self-employed or unpaid family workers. Such workers bear the brunt of income fluctuations and have limited access to healthcare, pension plans and paid leave. Women and men who married early are more likely to work in the agricultural and manufacturing sectors, and less likely to work in sectors such as social services, which require a higher level of education. These data do not account for

9 We do not examine LFP for men as there is very little variation in male LFP as most men work.

correlations with other factors that affect labour market outcomes, for example educational attainment, which we will be able to control for below.

Figure 11: Predicted labour force participation (women)

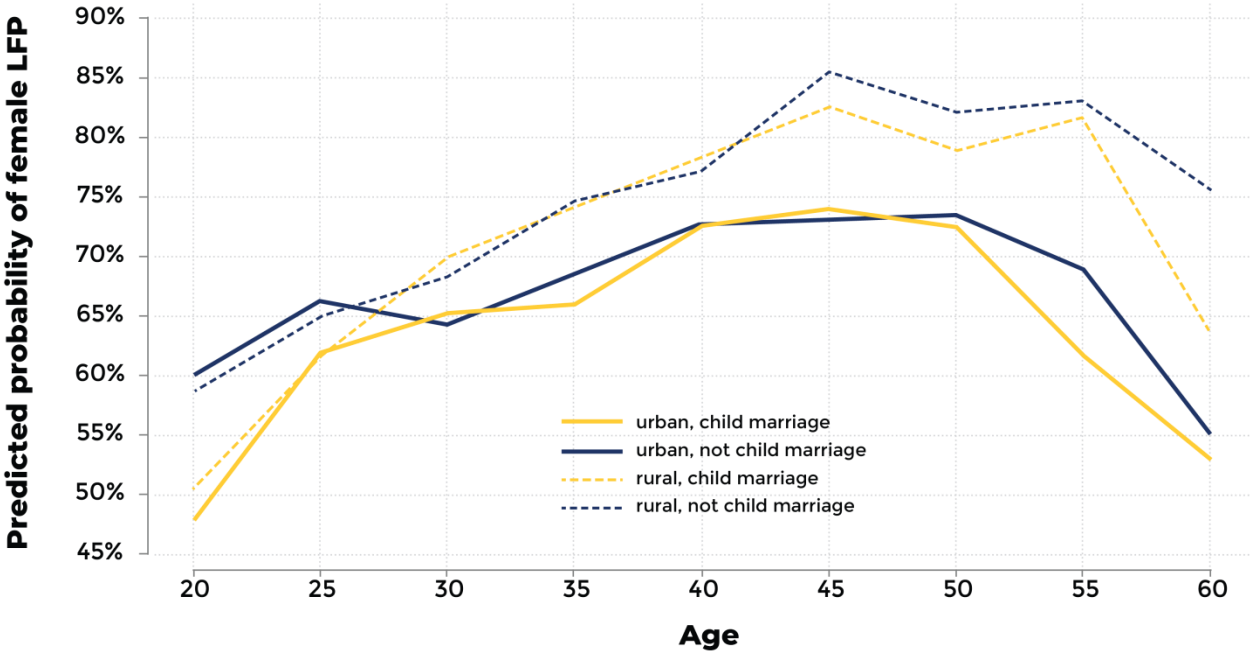


Figure 12: Employment sector

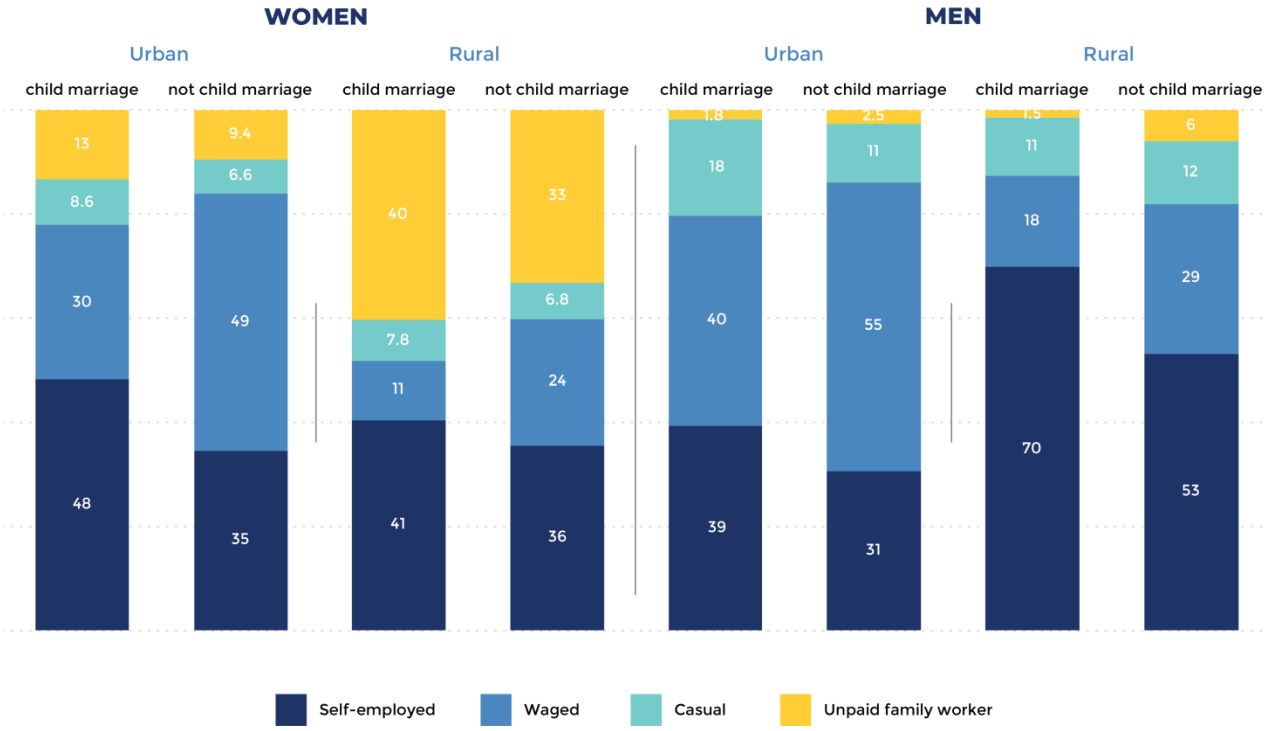
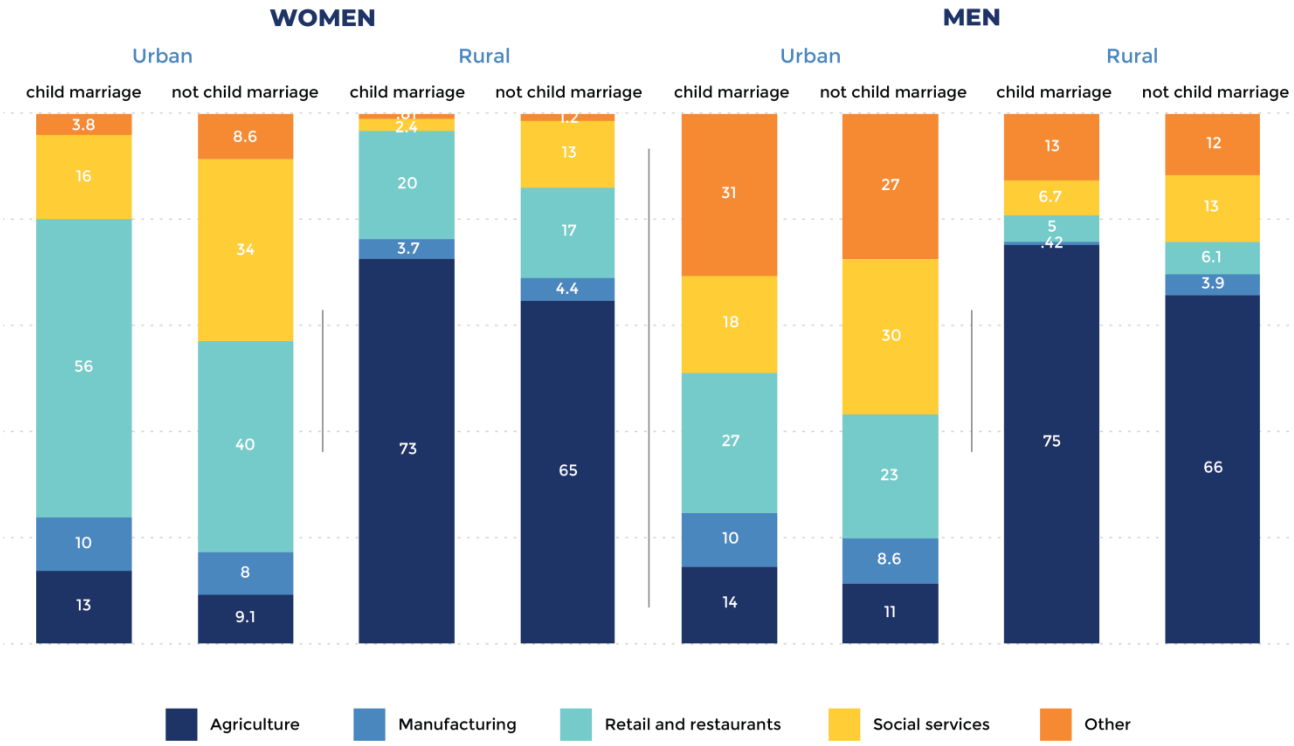


Figure 13: Industry of Employment

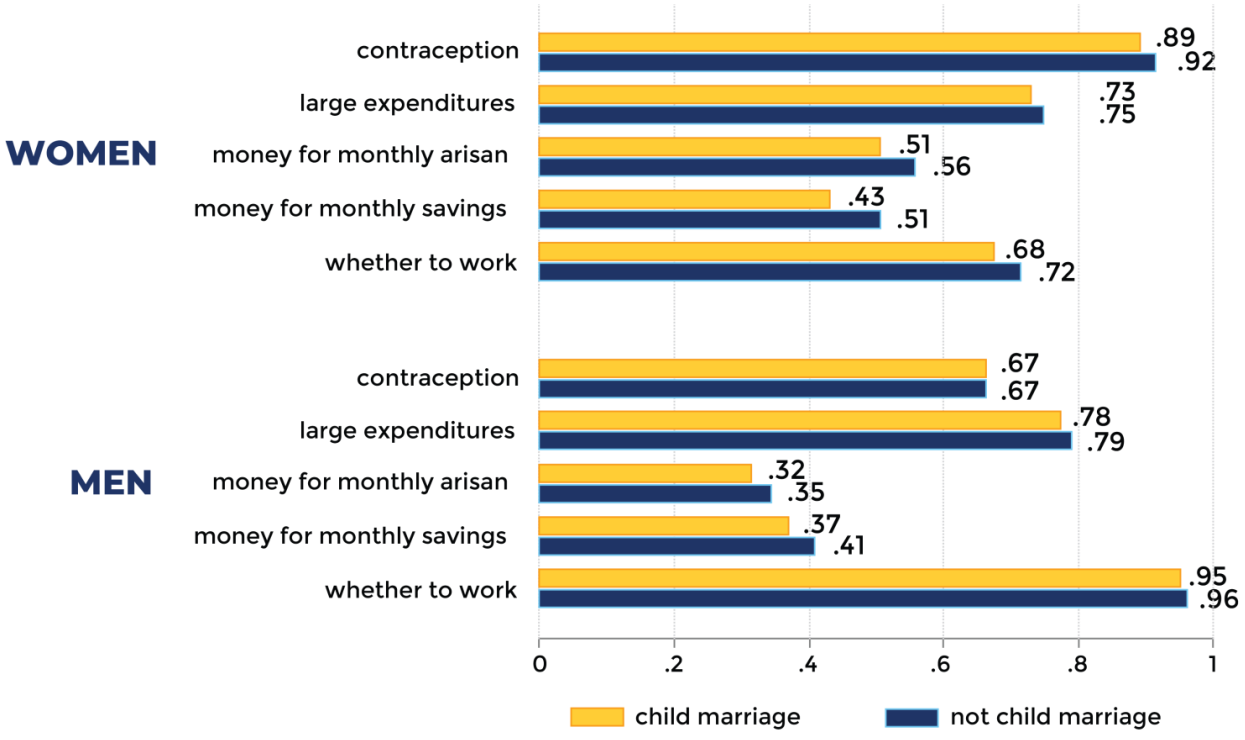


Household decision-making. Household decision making is commonly used as a non-economic indicator of wellbeing. Specifically, it is an important measure of whether a woman has a say in decisions that affect her wellbeing and that of her children. Figure 14 illustrates the extent to which women have a say in key household decisions.

The IFLS asks adults over 15 how their family makes decisions about expenditures and use of time and provides for multiple responses. It is important to note that where women have a say according to Figure 14, it does not mean they are the *only* decision maker. The survey allows for the respondent to report that they, their spouse, son, daughter, mother, father, mother-in-law, father-in-law, brother, sister, brother-in-law, sister-in-law, grandparent, son/daughter in-law and/or grandchild each contribute to the decision-making process.

In each of the categories among both men and women, those who married early were less likely to report that they had a say in household decisions compared with those who did not marry early. The differences were consistent but were not generally large. Notably, around 34 per cent of women who married early, and 30 per cent of women generally, felt they had no say in whether or not they worked. In contrast, more than 95% of men reported having a say in the decision whether they work or not

Figure 14: Who gets a say in household decisions



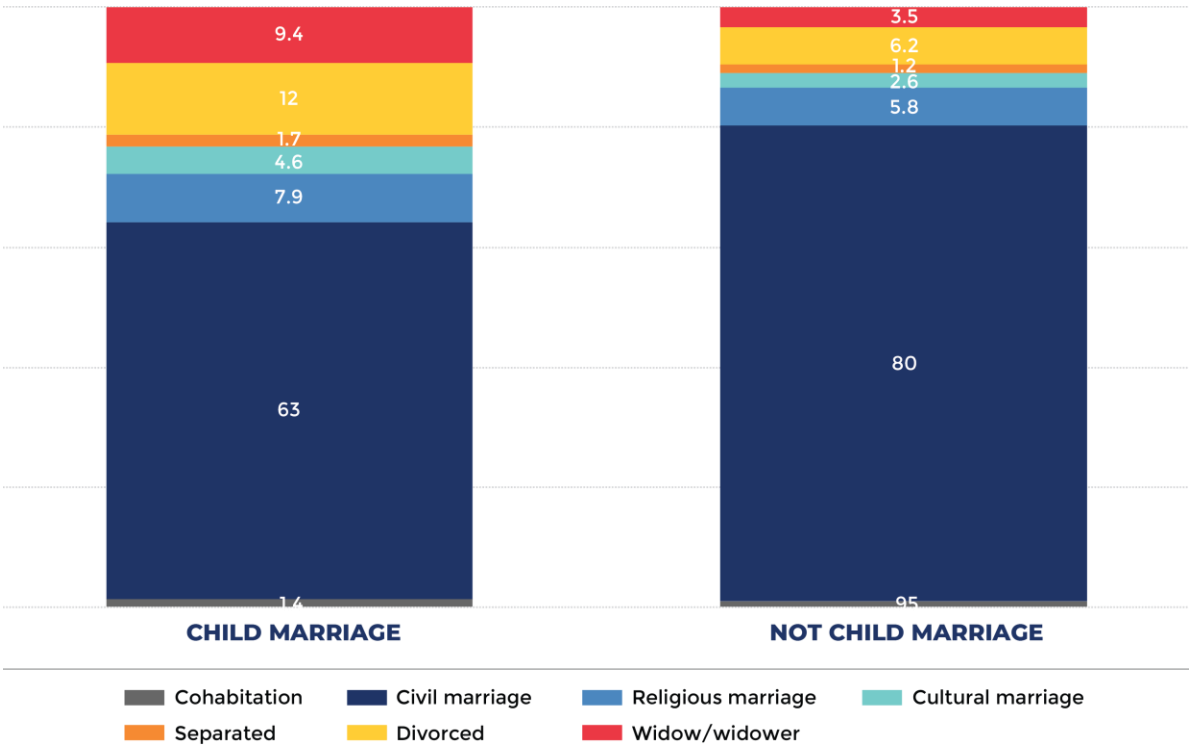
Divorce and remarriage. Women who married early were more likely to have been married according to religious or cultural (adat) law and less likely to be registered by the Civil Registry Office or Kantor Urusan Agama (KUA) (Figure 15). Consequently, they were less likely to have a marriage certificate. This is likely a source of disadvantage as not having a certificate can limit access to services e.g. maternal health services. These limits can be a function of bureaucracies requiring certificates and/or social stigma associated with, for example, having children in the absence of a certified marriage. The high prevalence of religious or cultural marriages also limits the scope for changes in the minimum legal age of marriage to reduce the prevalence of child marriage.

The average length of marriage was longer among those who married early, however they were also more likely to have been divorced or separated (Table 1).

Table 1: Divorce and remarriage

	Early marriage	*Not early marriage*
Proportion women holding a marriage certificate	*0.842*	*0.952*
Proportion women divorced from 1st marriage	*0.067*	*0.045*
Average length of first marriage:		
Women who divorced	*8.3 years*	*7.5 years*
Women whose partner died	*29.7 years*	*23.9 years*

Figure 15: Marriage status



Maternal health and child survival. Indonesian women who married early had children at a much younger age (Figure 16). The modal age of first birth of women who married at an early age was 19, compared to 28 for those who did not. Around one in 10 women who married early had their first child by the age of 18. By the age of 21, around 40 per cent of women who married early had given birth, compared with less than five per cent of women who did not marry early. Those who married early also had more children on average (2.68 for those who married early versus 2.02 for those who did not).The average women over 19 had 2.16 births, which is comparable with World Bank data for the Indonesian fertility rate in 2014 (2.14 per woman). The amount of time between pregnancies (spacing) did not appear to depend on whether women married early; the average spacing between a woman's first live birth and the end of the next pregnancy was around 45 months for all women who married early, and 46 months for women who did not marry early.

Figure 16: Mother's age at the end of first pregnancy

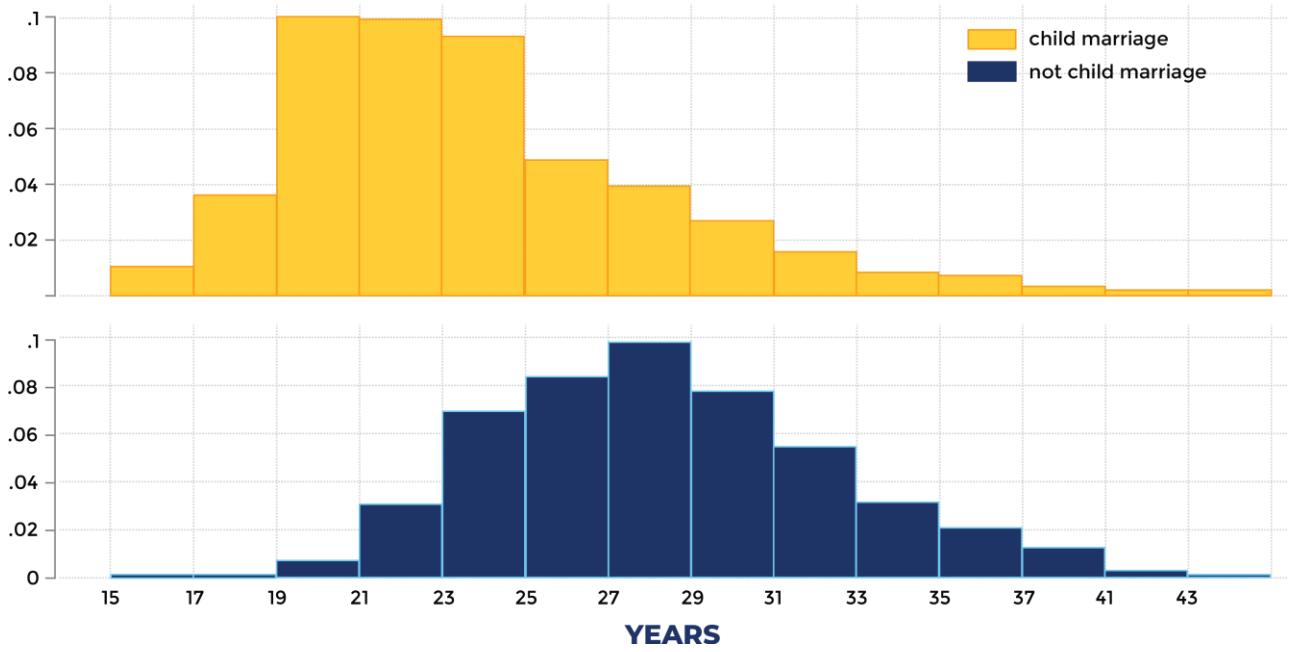
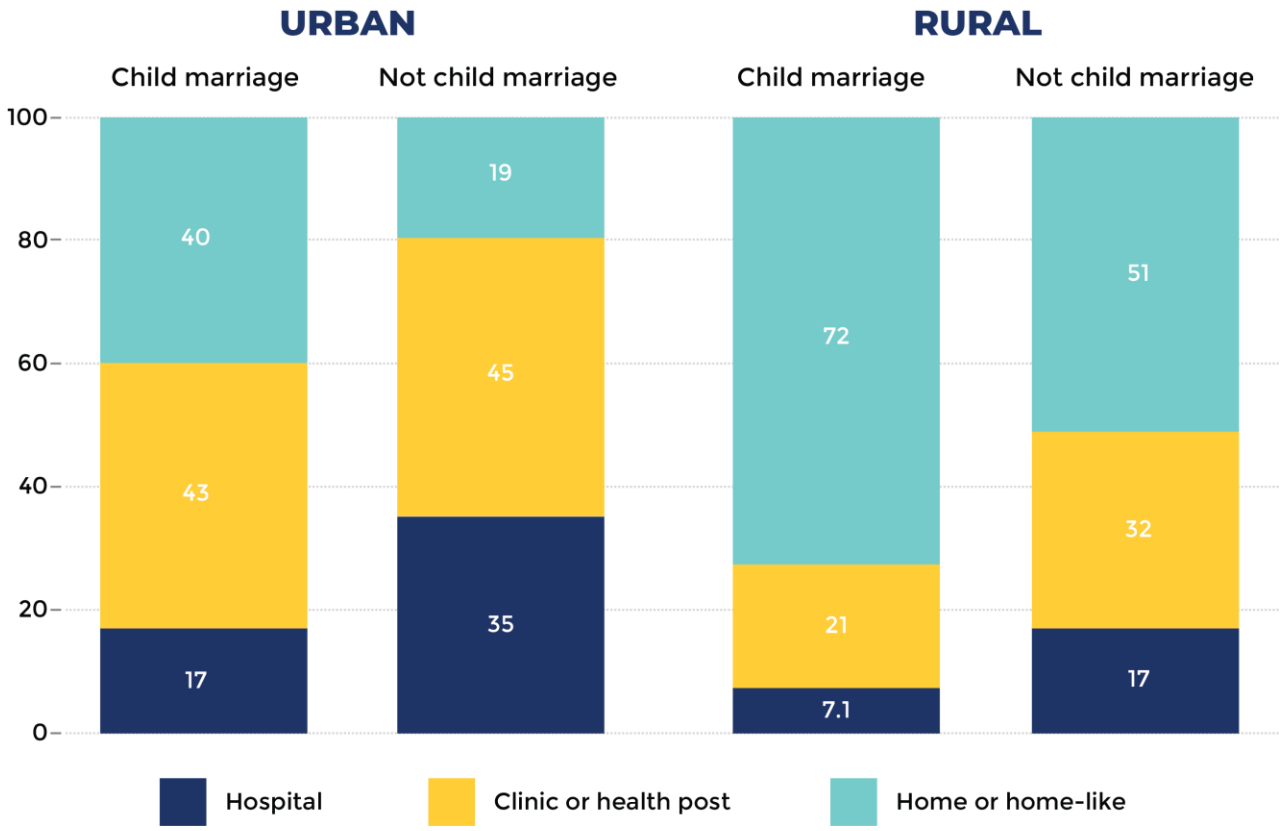


Figure 17: Birth location[1]



[1] 'Hospital' includes public, private and delivery hospitals. 'Clinic or health post' includes Community Health Centres, Village Delivery Posts, clinic/office of a physician or clinic/office of a midwife. 'Home or home-like' includes births at home, at a family member's home, or at the office/house of a traditional midwife.

Women who married early were more likely to have given birth without medical assistance, especially in rural areas (Figure 17). Nearly three in four women who were married early in rural areas gave birth at home, or in a home-like environment (own house, family member's house, or office/house of a traditional midwife) compared to about half of women who were not married at an early age, and less than one in ten gave birth in a hospital.

Further, women who married early have on average seven antenatal medical check-ups, which is lower than the World Health Organization (WHO) recommended minimum of 8 in order to reduce perinatal mortality and improve women's experience of care. Women who did not marry early have on average eight check-ups. They are also less likely to receive standard checks during their pregnancy, like blood tests or foetal heartbeat checks that help prevent complications during pregnancy and delivery, or to take iron supplements to prevent anaemia (Figure 18). Complications in pregnancy and delivery are

a leading cause of death among girls aged 15-19 (Mayor, 2004)[10] and previous research has found that women who marry early face an increased risk of death during childbirth (Nour, 2016).

Figure 18: Antenatal Care

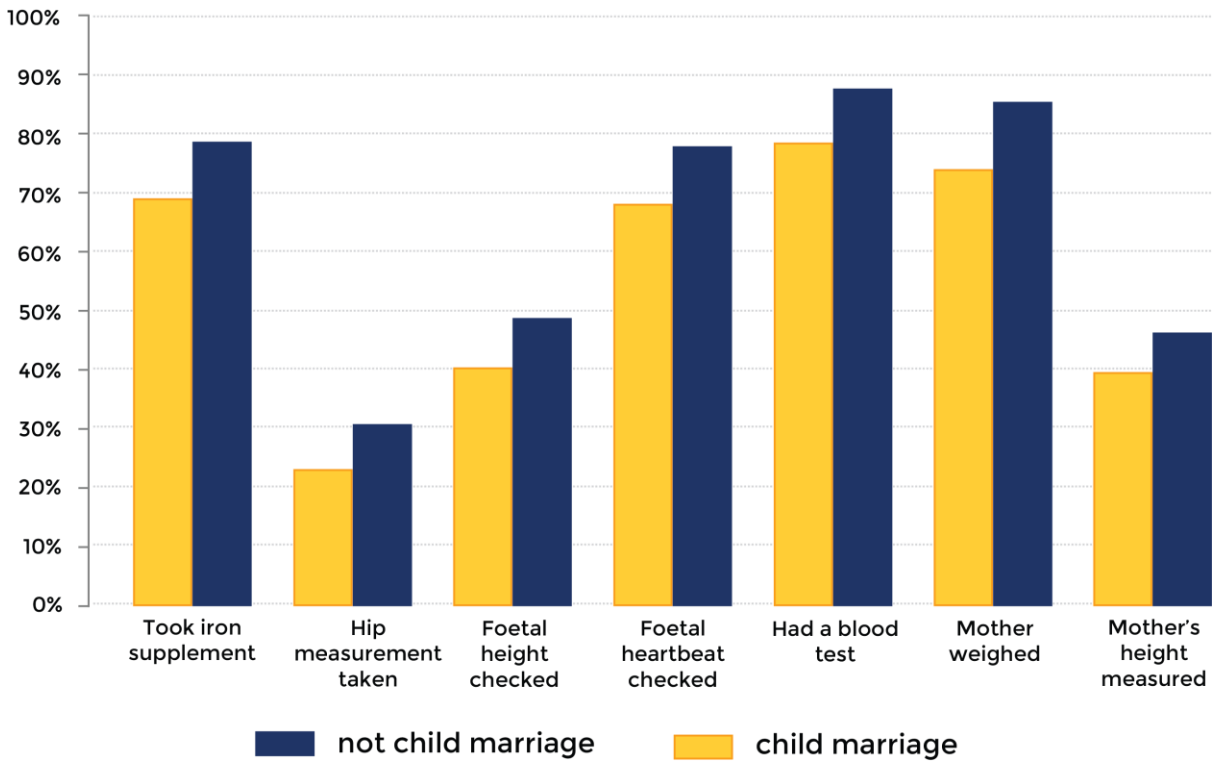
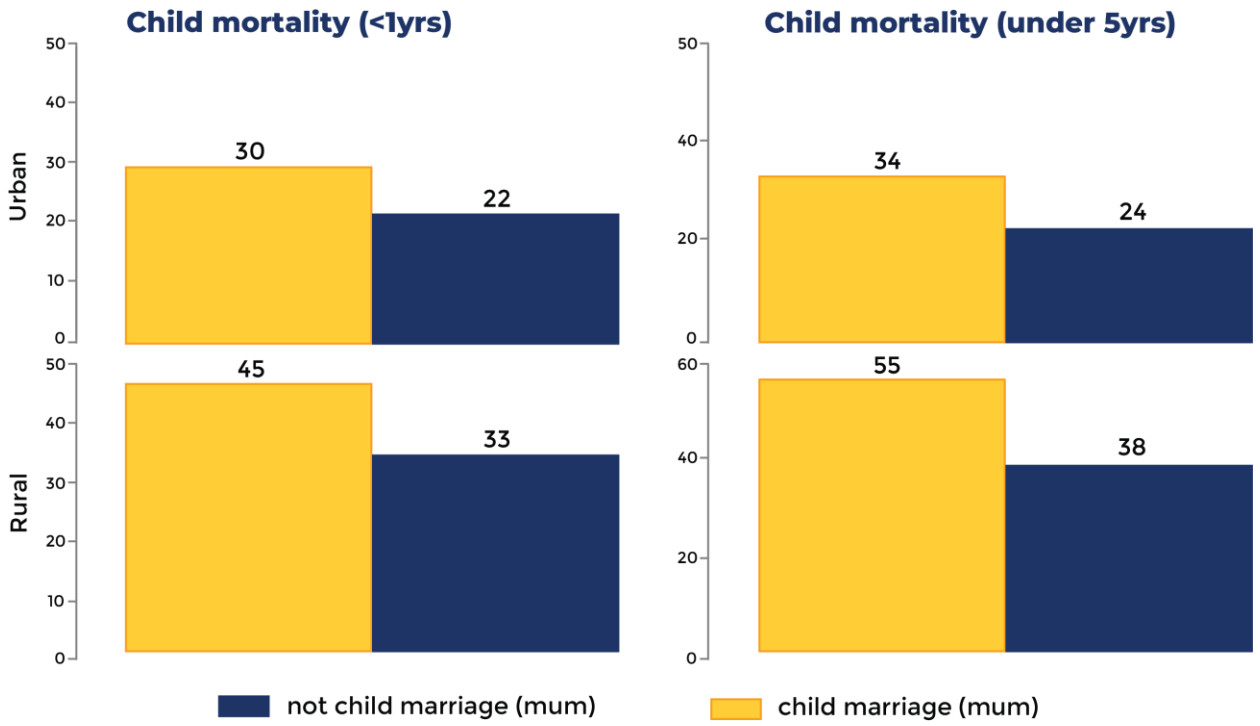


Figure 19 presents figures for child mortality under the age of one and the age of five. Almost one in twenty children born to women who married early and who live in a rural area died before they reached the age of five, with most of these children dying before the age of one.

Further, a child born to a mother who married early and who lived in a rural area was around 40 per cent more likely to die before the age of five, than a child who lived in a rural area but whose mother was not married early. The difference is similar, although not as stark, among those who live in urban areas.

10 This has also been confirmed for Indonesia by Cameron et al (2019) which found that delivery at a young age increases the risk of maternal mortality.

Figure 19: Deaths per 1000 live births



Child health and nutritional status. Children of women who married early were also more likely to have low weight-for age z-scores and be underweight (Figures 20 and 22) and have low height-for-age z-scores and be stunted (Figures 21 and 22). More than one in five children born to mothers who married early in rural areas were stunted, meaning that they had a length-for-age of at least two standard deviations below the global mean for developing countries (based on WHO data). Stunting is caused by a variety of factors, including poor nutrition and repeated infection. Stunting has serious and persistent negative health consequences and is associated with reduced cognitive and productive capacity, poor health and an increased risk of degenerative diseases.

Figure 20: Weight for age Z-score

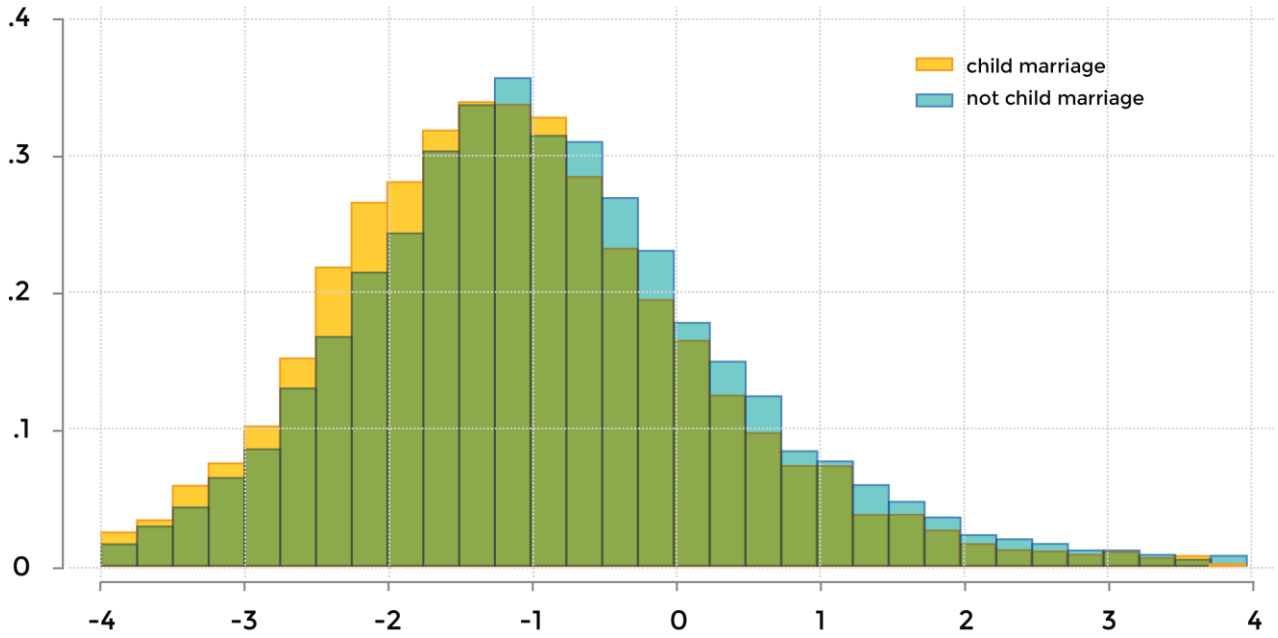


Figure 21: Height for age Z-score

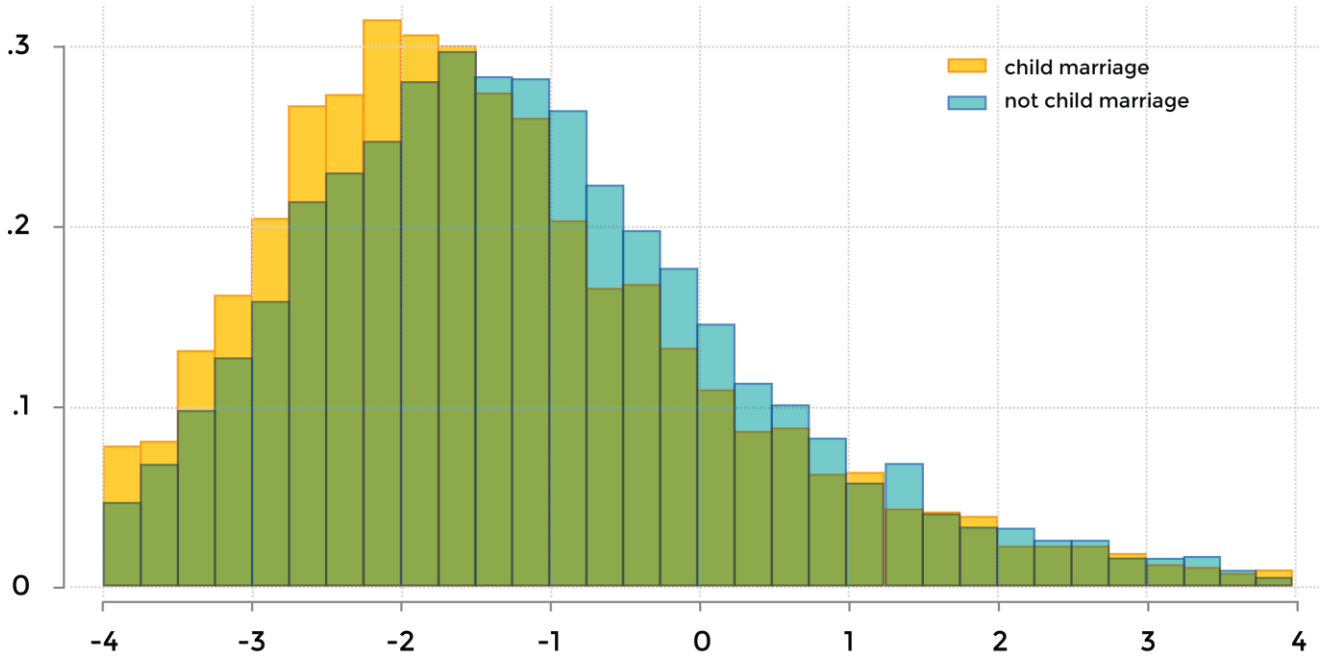
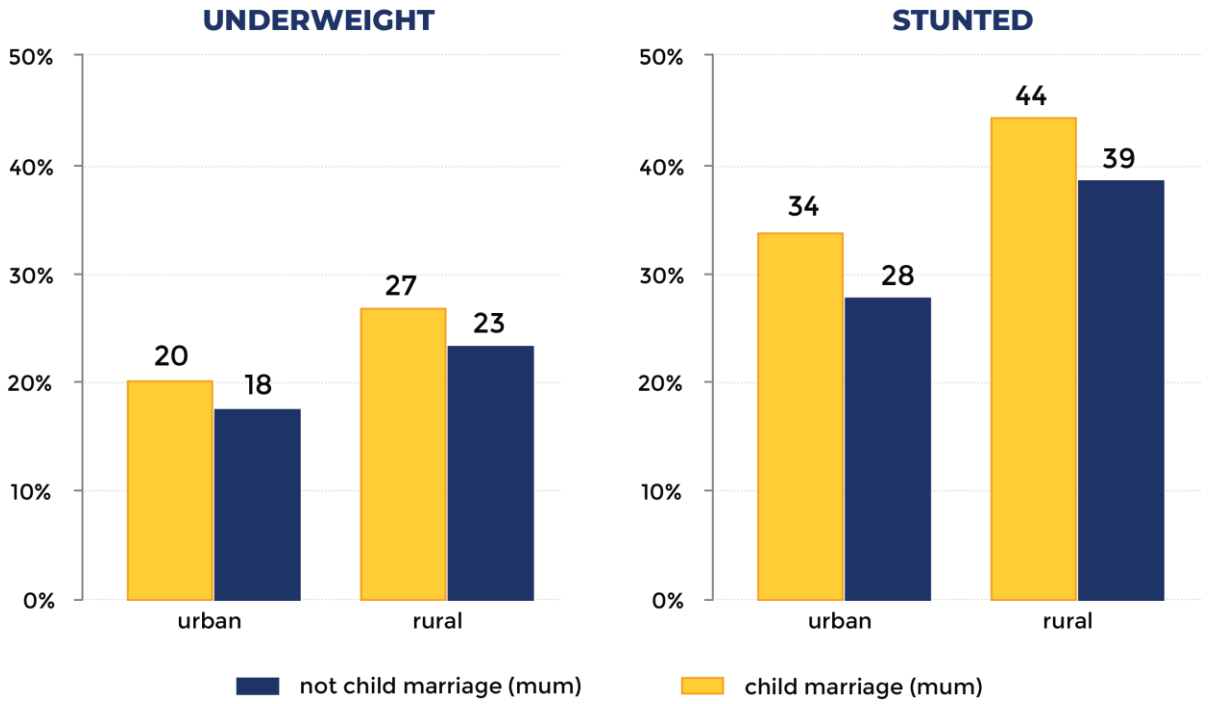


Figure 21: Stunting



Methods

It is straightforward to demonstrate that early marriage is correlated with many important indicators of welfare, but the exact nature of the relationship is more difficult to prove. This is because many of the correlates of child marriage are associated with disadvantage more generally. For example, men and women who marry early have fathers with lower levels of education. Children of parents with lower levels of education on average also have lower levels of education. Education levels determine what kind of job people end up getting. To what extent, then, is the underrepresentation of women who married early in waged jobs a result of their marrying early, and to what extent is it related to them coming from a less-educated background?

Such questions can be answered by careful econometric analysis which allows you to control for variables such as family background. This is the purpose of the accompanying analysis in this report.

To move from the associations presented in the previous section to quantify the causal effect of early marriage on the outcome variables we use the IFLS waves as pooled cross-sections. We use ordinary least squares (OLS) to estimate models with fixed effects (FE). The general estimation specification we use is shown in equation 1.

$$Y_{ihvt} = \alpha_1 + \alpha_2 Early\ Marriage_i + \gamma_2 X_{ihvt} + \gamma_3 HCh_h + \delta_{gt} + \varepsilon_{vt} \qquad (1)$$

Y_{ihvt} represents the outcome variables as described in the descriptive section (e.g. education, labour force, health, decisions making and fertility) for individual i, in household h, in village v at time-wave t. $Early\ Marriage_i$ is an indicator variable for each individual that takes the value of 1 for those who were married before the age of 19 and 0 otherwise. X_{ihvt}

are contemporaneous individual variables like age, religion and urban residence.[11] Including contemporaneous variables helps control for current circumstances (e.g. age) that can influence the variable of interest, for example older people having poorer health. HCh_{hvt} are time invariant characteristics of the household individuals grew up in, like years or education of the father and if the biological parents were married when the individual was 12. These variables help us to control for early life investments that affect later outcomes, for example individuals with a father with low education (as a proxy for poverty) are more likely to have lower education attainment or poorer health than otherwise similar individuals. The effect of early marriage on Y will be captured by α_2, and its sign of will depend on the outcome variable we are examining. For example, if we are looking at education, a negative α_2 is interpreted as education attainment decreasing by an average amount of α_2 due to early marriage. In contrast, for underweight α_2 would be the average change in the incidence of underweight due to early marriage. In this case we would expect α_2 to be positive as child marriage increases the probability of being underweight.

Differences between regions are accounted for by the fixed effects δ_{gt} which capture the differences between groups g at time-wave t. We specify two main groups - provinces and villages. Including these fixed effects in the estimation controls for unobserved differences between, let's say, villages that influence the outcome variables. For example, access to formal employment may be lower in some villages than others. If more people who were marred early live in such villages, then not controlling for which village the respondents live in will confound the effect of early marriage and the probability of having a formal job. We also interact those groups with the time the survey was conducted to account for differential time trends across provinces or villages.[12] An intuitive way of thinking about FEs is that we calculate the effect of early marriage on outcome variables by comparing individuals who marry early with those who do not but who live in the same province/village, and therefore are exposed to similar conditions, like traditions, culture and institutional settings. As individuals living in the same village are more like each other, than individuals living in the same province, we expect an improvement in the reliability of the estimated effect of early marriage on the outcome variables as we move to smaller groups (from province to villages).

Therefore, our results will first present estimations that control for province*time-wave FE and then village*time-wave FE. We also go a step further by presenting results where we compare sisters where one got married early and the other did not. In this case the group for the FE is sisters. This comparison controls for all external factors, both observable and unobservable, experienced by sisters e.g. family background. Within our sample there are around 570 unique households in which at least one sister married early and at least one did not. In total, the sample includes around 1250 sisters, of whom 627 were married early.

Finally, ε_{ihvt} is an error term. We cluster the standard errors at the village x time-wave level to account for correlation in the errors between individuals in the same village at a given

[11] In robustness checks we included consumption per capita to control for the contemporaneous effect of current household characteristics, the results do not change from what we present in the results section and we decided to exclude them as they are potentially endogenous.

[12] In technical terms, fixed effect models reduce the amount of omitted variable bias due to characteristics of respondents being unobserved or not available in the data. The effect of this unobserved heterogeneity is removed by subtracting the group-level average.

time. For the sisters FE we cluster the standard error at the sister x time-wave level to account for correlation in the errors between sisters.

We estimate equation 1 separately for men and women to estimate the effect of early marriage on outcomes for both genders. In the results section we will present the results for women first and then for men.

Fertility

For fertility variables (total number of live births, still births and miscarriages) we estimate equation 1 including an additional individual variable to account for the total exposure to pregnancy of women. This is called the fertile period and is defined by the number of years from onset of menstruation to the survey date. This will account for the fact that for older women (over 49) we observe total fertility while for young women we observe fertility up to that point. Therefore, we compare women with similar fertility exposure. In this estimation we only include the most recent fertility status of women (i.e. the total number of births in 2015 for women in the IFLS and 2012 for women in the IFLS-East).

Child-level Outcomes

Finally, we estimate the effect of early marriage on child-level outcomes using equation 2. In this case we have one observation per child.

$$ChY_{ihvt} = \alpha_1 + \alpha_2 Mother's\ Early\ Marriage_i + \gamma_2 X_{ihvt} + \gamma_3 MotherHCh_{hv} + \gamma_4 Ch_{ihvt} + \delta_{gt} + \varepsilon_{vt} \quad (2)$$

We estimate the effect of child marriage on the probability of the birth being medically supervised (for all births– live births and still births) and the effect on child mortality (for live births). For those children who were under five years of age at the time of the survey we present anthropometric z-scores, underweight and stunting. For those aged 7 to 14 we present results of cognitive development tests, and for those 0 to 18 we present results for the probability of having a birth certificate. Finally, for those children who were 18 or older we present educational attainment in years. As in equation 1, we control for contemporaneous mother and household characteristics (X_{ihvt}), mother's characteristics when she was a child ($MotherHCh_{hv}$) and children's own characteristics such as gender and age (Ch_{ihvt}). We use an identical FE strategy as in equation 1 and present province x time-wave, village x time-wave and sisters x time-wave fixed effects.

Results

The results for women, as the group most affected by early marriage, are discussed first. We then go on to more briefly discuss the results for men and the effect of girls marrying older men versus underaged girls and boys getting married.

Consequences of child marriage for women

Education. Table 2 presents results for educational attainment. Column 1 shows that the raw difference between the years of education attained by women who are married before the age of 19 is 3.2 years less than the educational attainment of other women (those who get married at an older age and those who don't marry). Subsequent columns control for a range of other variables so we can be more confident that the difference between those who marry at an early age and others is caused by early marriage and not a result of other factors such as socio-economic status, as discussed above. Column 2 controls for religion, paternal education (as a proxy for family socio-economic background), whether the woman's parents remained married when she was aged 12 (controlling for stability of family life), the age of the woman at the time she was surveyed, and whether she lives in an urban area at age 12 (as this can affect educational and other opportunities). Column 2 also includes province fixed effects. In Column 3 we include village fixed effects which are even stronger controls as they control for any characteristics of the village in which the woman lives that could affect the outcome variable. Finally, Column 4 includes sister fixed effects. In this column only observations from families in which at least one sister was married under 19 and at least one sister was not are included and the sister fixed effects control for all non-time varying family characteristics (hence the controls for paternal education, parent's marital status and religion are no longer included as their effects are captured by the sister fixed effects). These are hence the strongest set of controls and should theoretically be the most reliable causal estimates. However, as the sample size is much reduced in these estimations, the statistical power is also much reduced which limits our ability to detect statistically significant differences. The same sequence of results is presented for each of the outcome variables below, with the only difference being that for subsequent outcome variables we control for urban area at the time of the survey (rather than at age 12, which is only relevant for when education is being attained) and interact the district and province fixed effects with survey year (as the other outcome variables, such as labour force participation, vary across time and we use multiple observations per individual in the sample).

All of the columns in Table 2 show that women who get married under the age of 19 have worse educational outcomes. As women who marry early are more likely to be muslims and from families with lower levels of education, once we control for these factors we see that the impact of early marriage is smaller than the raw difference but remains strongly statistically significant. The results with village fixed effects suggest that early marriage results in women obtaining on average 1.6 years less education as a result of being married early. The results identified from differences across sisters (Column 4) suggest a difference of 0.65 years (still strongly significant).

Employment. Table 3 presents the results for labour force participation. Column 1 shows that women who married early are on average four percentage points (6%) less likely to be working. For LFP we include additional control variables – whether the woman is partnered and the number of children under the age of 5 - as these are known to be important determinants of female LFP. Both reduce female LFP. We also control for age using dummy variables for age rather than a single continuous variable. This allows us to pick up the variation of LFP across the lifecycle. The negative effect of early marriage on LFP persists after adding these controls. Column 4 allows the effect of child marriage to vary with urban/rural location. This is important as the labour market varies considerably

between urban and rural areas and so the effect of being married early may similarly differ.[13] It shows that the negative impact of early marriage is being driven by women who married early in urban areas working less than other women. There is no difference in rural areas. The results with the sister fixed effects are insignificant.

Table 3 also examines the probability of working in the formal sector. It shows that, of those women who work, early married women are 20 percentage points less likely to be working in the formal sector. This difference decreases to 12 percentage points with the addition of the full set of controls but remains strongly significant (Column 8). Again, this effect is larger in urban areas. Women who married early in rural areas are 9 percentage points less likely to work in the formal sector, compared to 16 percentage points (47%) in urban areas. This is a very large effect. In the comparison across sisters, a sister who married early is 12 percentage points less likely to be working in the formal sector than her sister who was not married early.

The last outcome variable examined in Table 3 is hourly earnings. Of those women with positive earnings, women who married early earn on average 60% less than otherwise similar women who did not. This is a very large and strongly significant result. It persists with the addition of villages fixed effects, suggesting a (still large) 26% lower hourly earnings.

Household living standards. Table 4 presents results for household per capita consumption, as a proxy for household living standards. Column 1 shows that on average women who were married at an early age live in households that have 17% lower per capita consumption. However, once we add the control variables and control for the location in which the woman resides, this impact diminishes. Women who were married at an early age live in households which on average have 5% less per capita consumption than that of women from similar backgrounds in the same province (Column 2) and only 2% less than other women in the villages in which they live (Column 3). This suggests that those who marry early live in villages in which per capita consumption is on average lower. The results comparing sisters suggest that child marriage decreases per capita consumption by 1%, although this result is not statistically significant (Column 4).

Family structure and decision-making. Panel A of Table 5 reports results examining whether the marriage was a civil marriage, i.e. whether the couple have a marriage certificate. Women who married under the age of 19 are about 2 percentage points less likely to have a marriage certificate (although this result becomes insignificant when we compare across sisters within the same household). Table 8 below also shows that child marriage is associated with a lower probability of their children having a birth certificate. Not having these certificates may have implications for the ability of women, their children and their household to access social protection programs, and in some instances, for their

[13] We allowed the effect of child marriage to differ between urban and rural areas for the other outcome variables too but do not report these results as the urban/rural difference was only important for LFP. Note that we do not control for education of the woman here or in the specifications for any of the other outcome variables. The reason for this is that early marriage reduces education and to the extent education affects other outcomes, such as employment outcomes, controlling for education would mean we do not detect the full impact of early marriage.

children to attend school. Not having a marriage certificate also limits the ability of women to seek legal redress in the case of divorce.

Panel B of Table 5 examines the divorce rate in first marriages. It shows that marriages at an early age are about 4 percentage points more likely to result in divorce. This is a very large effect as it is an 80% increase (from the sample mean of 5%) in the probability of divorce. Women who married early are more likely to be living with a partner when interviewed, which suggests that those who got divorced often remarry (Table 5, Panel C).

Within the household, women who married early are significantly less likely to have a say in household-decisions. This result is being driven by these women having a lesser say in decisions about household savings, use of contraception and whether they work or not, (Panel D). Early marriage thus decreases women's empowerment.

Fertility, childbirth and child mortality. Looking at the results with village fixed effects (Column 3) we find that child marriage results in the age at first birth being more than 3 years earlier and in the women having on average 0.5 more children (Table 6, Panel A and B). The IFLS provides a rich array of data on antenatal care. Panels C to I show that women who marry early and become pregnant attend fewer antenatal medical check-ups. They are less likely to take iron supplements during pregnancy. They are also less likely to have had foetal height and heartbeat checked, to have had a blood test and to have had their weight and height monitored during pregnancy. This all places them at heightened risk of an adverse outcome. Child marriage, other things equal, also results in a significantly lower probability of the woman having a medically supervised birth (Panel J). There is no effect on the number of miscarriages and still-births (the coefficients are positive but statistically insignificant). We are unable to assess the effect on maternal mortality as there are too few observations in the data. However, the existing literature finds that giving birth at a young age and not having a medically supervised birth is associated with a heightened risk of maternal mortality, (Nour, 2016) and Cameron et al. (2019).

Early marriage increases the probability of the child dying before the age of one by about 1 percentage point (Panel M). This sounds small but is a 20% increase on the mean across the sample of 0.05. Under 5 mortality increases by the same amount (Panel N).[14]

Women's Health and Wellbeing. IFLS respondents are asked to rate their general health on a scale from 1 to 5 where 5 is very healthy and 1 is very unhealthy. Table 7 reports the results and shows that early marriage is associated with a negligible decrease (1%) in self-assessed health, with this impact becoming insignificant once village and sister fixed effects are included. The IFLS also asks a series of questions designed to assess mental health. The coefficients on early marriage are negative, suggesting worse mental health, but small and statistically insignificant. Blood samples are also taken from female respondents to assess whether they are anaemic or not. Early marriage appears to decrease the prevalence of anaemia which is the opposite of what might have been expected. The results are relatively consistent across specifications but become insignificant with the inclusion of sister fixed effects. Panels D and E of Table 7 examine whether early marriage is associated with the woman being more or less likely to be

[14] We do not report results with sister fixed effects here as child death is a relatively infrequent occurrence and the sample size does not allow us to accurately estimate effects.

underweight and overweight. Both underweight and overweight are negative indications of health. Women who married early are less likely to be underweight but 5 percentage points (16%) more likely to be overweight.

Finally, Table 7 presents results for subjective wellbeing. IFLS respondents are asked a series of questions about their wellbeing. We constructed a standardised index from their responses to these questions. They are asked whether the current situation is adequate for their needs, just adequate for their needs or more than adequate about their needs. They are asked this in relation to their current standard of living, food consumption, healthcare, and their children's standard of living, food consumption, healthcare and education. They are also asked to indicate on a 4-point scale, how happy they are. Panel F shows that women who married early are significantly less satisfied with their lives. On average, their subjective well-being index is a whole standard deviation lower than similar women who married at a later age. This is a large effect.

Child Health and Education. Panel A of Table 8 shows that, as was discussed above, children born to a woman who got married as a child are 8% less likely to have a birth certificate. This is likely to hinder their access to publicly provided services.

The results for weight-for-age, height-for-age, underweight and stunting confirm the findings from the descriptive analysis. Early marriage results in children who weigh less at any given age (Panel B, Table 8) and are more likely to be underweight (Panel C). The raw difference is a 4 percentage point (21%) increase in the probability of being underweight which is a large difference. However, once other variables that would be expected to affect weight are controlled for, early marriage is found to result in a smaller and insignificant, decrease in weight-for-age and underweight. The results are stronger for height and stunting. Children of women who married early are shorter for their age than children of other women, even when including the full set of controls. The results for stunting show that child marriage is associated with an increase in the risk of stunting of about 4 percentage points (12%).

In addition to being more likely to be stunted, children of women who marry at an early age perform worse in cognitive tests than other children, Panel F. This effect (scoring 0.12 standard deviations less than other children) is relatively small but strongly statistically significant. These results are from Raven's tests which measure general cognitive ability by testing pattern recognition in matrices that become more difficult as the test progresses. Cognitive ability of this variety is meant to be unaffected by educational attainment. Cognitive ability however affects education as individuals with higher cognitive ability do better at school and so are more likely to progress to higher levels of education (Raven, 2002).

Panels G and H report the results for the impact of child marriage on the educational attainment of sons and daughters by the time they are aged 18 or over. The raw difference shows that their education is adversely affected, with the impacts being similar for sons and daughters. Sons obtain on average 0.92 of a year less education, and girls 0.99 of a year. The results become insignificant with the addition of village x survey wave fixed effects.[15]

[15] We do not report results for sister fixed effects in this table as the sample sizes become very small.

Consequences of child marriage for men

We now examine impacts of marriage at an early age on key outcomes for men.

Education. Table 9 shows that, like women, men who marry early obtain significantly less education than other men. The results are statistically strongly significant and similar in magnitude to the impacts on women. The raw difference in educational attainment between men who marry early and other men is about 3 years. Once we include our full set of controls this is reduced to 1.8 years.

Employment. Early marriage also significantly affects men's labour force participation, Table 9, Panel B. While women's labour force participation decreases with early marriage, men's labour force participation increases. The raw difference is 3 percentage points. Once we account for these men coming from families with lower levels of education and other household characteristics, we find that child marriage increases labour force participation by 1 percentage point. Note though that child marriage results in the man being partnered and having children which we control for here and most of the increase in LFP operates through these channels. Men who marry early are likely to be working more than men who did not as a result of having to support their wife and children from an early age, on what is likely to be lower hourly earnings as a result of lower levels of education. There is no difference in the impacts between urban and rural areas.

Further, Panel C shows that early marriage decreases the probability of men working in the formal sector by around 6 percentage point (13%). They are thus in less attractive employment. Their hourly earnings are also a lot lower (Panel D). After including all controls men who married early earn 18% less than other men per hour. This is a large earnings penalty but smaller than the 20% penalty experienced by women who marry early.

Household living standards. Lower educational attainment and less lucrative employment results in men who married early living in a household with about 4% lower per capita consumption than otherwise similar men. This is a bigger impact on consumption than resulting from women marrying early.

Family structure and decision-making. Like women who marry early, men who marry early are more likely to experience divorce (5 percentage points, an increase of more than 100%) but also likely to remarry and so more likely than other men to currently be partnered (10 percentage points).

Panel H of Table 9 shows that men who marry early report a lesser say in household decision-making than men who married at a later age. This may be because there is a lesser age difference between them and their wives.

Health. The results for self-assessed health, mental health, underweight and overweight all show no causal impacts of child marriage once the full set of controls are included.

Wellbeing. As we did for women above, we examine subjective wellbeing for men using a standardised index of wellbeing. Like women, men who married early report lower levels of wellbeing. The magnitude of this effects is large and similar to that experienced by women who marry early (approximately one standard deviation).

Different types of child marriage

Consultations with grassroot organizations in Indonesia revealed a belief that there are two main reasons for early marriage, which correspond to two "types" of marriages. The first is the case where young girls are married to older men, often for economic reasons as these men are able to financially provide for the girl and reduce the economic burden on the girl's family. The other "type" of early marriage involves parents pressuring young couples to marry to avoid the social stigma associated with extramarital adolescent sex. In this section we examine whether these different "types" of early marriage have the same consequences.

Table 10 presents the results. We include an additional variable in these specifications which is an indicator of whether both the husband and the wife were under 19 years of age at the time of their marriage. The coefficient on this is interpreted as the additional effect of the spouses both being under-age, beyond the effects of early marriage of just the woman. We present results with the full set of controls and village or village x survey wave fixed effects.[16]

Table 10 shows that for women under 19, marrying a boy who is under the age of 19 has an additional educational penalty of almost half a year, compared to child marriage to an older man. Women who marry early and marry a similarly aged boy are also even less likely to be working. Their other employment outcomes, if they are working, are largely similar whether they marry an older man or a similarly aged boy. Their per capita household consumption is, not surprisingly, lower (by 5%) if they marry a boy rather than an older man. That they are less likely to work than women who marry an older man may reflect the finding that they are also more likely to have more children. They are significantly less likely to divorce, however, if they marry someone more their own age (2 percentage points), They are even more unlikely to have a marriage certificate, with all of the potential negative consequences described above. There is no differential effect on the other fertility-related outcomes and most health outcomes (results not presented). There is no additional impact on the likelihood of their children being underweight or stunted but there appears to be a larger negative impact on the educational levels of their children if they marry someone more their own age (likely because of the lower level of household consumption) and this effect is stronger for their daughters than their sons.

In terms of their overall well-being, the coefficient on "both spouses marry early" is large and negative but statistically insignificant, suggesting that their overall wellbeing is no worse than that of women who married early to older husbands. It may be that the negative educational and economic consequences of both spouses marrying under the age of 19 is offset by a happier marriage, as evidence by the lower divorce rates.

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16 We present these results only for women as most men who marry early have a young spouse. The additional effect of the indicator that both spouses married early was insignificant in all specifications except for mental health where it indicated a negative impact on men who married while under 19 and married a girl who was also under 19. This could reflect the stresses associated with supporting a family at a young age.

Conclusions and Policy Implications

To summarise, we have demonstrated that child marriage has significant negative impacts on both women and men, and their children. These impacts include lesser educational attainment (for both men and women), women being less likely to work, both men and women being employed in lower-earnings jobs and living in households with lower per capita income. Overall wellbeing also suffers. Marriages that involve a young girl marrying an older man are more likely to end up in divorce than other marriages. Both women and men who marry at an early age indicate that they have lesser involvement in household decision-making.

Child marriage significantly affects women's experience of pregnancy and childbirth and their children's health. Child marriage results in women having their first child more than three years earlier than other women. This results in them having more pregnancies and children. Early pregnancies are known to be associated with maternal mortality. Child marriage results in fewer antenatal check-ups, a lesser likelihood of the woman having a medically supervised birth and increases the probability of her child dying before the age of 1. Under-5 child mortality is also increased.

Those children who do survive, are more likely to be stunted (low height-for-age) which is known to be associated with lower cognitive ability and other health problems later in life. Both sons and daughters of women who married at an early age score worse on cognitive tests than other children.

Marriages that involve young girls marrying young boys (often as a result of parental pressure) seem to impose additional burdens as the couple struggles to support a young family with low educational attainment of both spouses. Theses couples are however, maybe not surprisingly, less likely to divorce than couples where a young girl marries an older man.

Given the negative consequences of child marriage, what can be done to reduce it?

Changing marriage laws

Indonesia has made a good start by legislating to raise the legal age of marriage for women from 16 to 19 years, in line with the legal age of marriage for men. Research however shows that the effects of changes in the legal minimum age of marriage are not as straight forward as one might think. Families may choose not to comply with such laws with this being particularly likely in times of economic hardship and if there are few ways for households to cope when income drops unexpectedly (e.g. if they lack access to credit), Corno and Voena (2016). The common practice of marrying girls under religious law, and not civil law, also lessens the scope for changing the legal marriage age to affect the behaviour of those who are strongly attached to tradition and social norms.

Au Yong Lyn (2019) uses the differential timing of the imposition of minimum marriageable age laws in Mexico to estimate the effect of law reform on child marriage, adolescent fertility and school attendance. She finds that states adopting minimum age laws decreased child marriage rates by 37%. Although girls were less likely to get married, there

was an *increase* in teenage births of 11%, with the increase being largest for girls from lower socio-economic backgrounds. Pregnancy became an alternative to marriage as a means of establishing commitment to a relationship. In the long term this was found to lead to even more economic dependency on men for financial support than if they married early.

You might expect that not allowing girls to be married at a young age would result in girls staying in school for longer. Au Yong Lyn (2019) however finds that girls' school attendance only increased by 0.9%.

Hence, in addition to legislative change, financial incentives in terms of reduced educational costs and/or compensating payments to families might be needed to induce compliance. Increasing society's awareness of the costs of child marriage to families' children and grandchildren may also increase compliance as they become aware that any benefits are unlikely to outweigh the long-term costs.

Increasing access to education and training

Reducing the parental cost of education has the potential to delay the age of marriage as parents may be more inclined to keep girls (and boys) at school. This can be done by increasing families' ability to access education (school construction and increased educational supply) and by reducing school fees etcetera. The desirability of a bride increases with education but may decrease with age, and once girls dropout of school they are more likely to get married, Adams & Andrew (2019). Reductions in the cost of keeping girls at school thus decrease the costs associated with not marrying a daughter at a young age while also generate benefits in the form of the quality of husband she will later be able to attract.[17] Better educated girls are also more likely to marry better educated boys with higher earnings potential.

Formal education combined with other educational programs like vocational training or life skills also have the potential to empower them to make more informed decisions over their future. Bandiera et al (2020) present evidence from a randomized control trial in Uganda where a multifaceted program provided girls with vocational skills to enable them to start a small-scale income generating activity and life skills to help them make more informed decisions about sex, reproduction and marriage. They find that four years after the program started, girls who participated were less likely to have been pregnant (as a teenager) and were also less likely to have got married or be co-habiting with a partner. Further, they find that the program changed the girls' aspiration in relation to the age they want to get married and the age to start childbearing. Finally, they report that the girls were more likely to be engaged in income-generating activities, be able to provide for themselves and be self-employed.

Financial Incentives

Providing economic incentives to families, conditional on the postponement of the marriage of their daughters until after the legal minimum age - which at first glance may seem odd but has been implemented quite widely in a variety of settings - has been shown to be able to delay the age of marriage, Amin et al (2016). Buchmann et al (2018) further show that in Bangladesh (where 74% of the women aged 20-49 are married by the

[17] These returns to education through marriage can also be reflected in higher bride prices where this is the custom, as in some parts of Indonesia, Ashraf et al. (2020).

age of 18) providing financial incentives (in the form of free cooking oil) to unmarried 15 year old girls to remain single until the age of 18 reduces the probability of child marriage by 23%, reduces the probability of them giving birth by the age of 20 and makes them 24% more likely to be enrolled in education at the age of 24.[18]

One might expect that a cash transfer conditional on school enrolment (as in the case of standard conditional cash transfers, such as Indonesia's PKH) and not explicitly attached to age of marriage, may have the same effect. Although these programs have been widely shown to increase educational attainment, there seems not to be a systematic effect on the age of marriage, Amin et al. (2016).

Social Norm Change Campaigns

While economic conditions and education costs play a role in parents' decisions as to whether to marry their children early or not, child marriage is also in large part a cultural phenomenon with families often following the dominant social norm in their communities. Social norms do evolve over time in response to changes in economic costs and benefits but they can also be influenced more directly by information campaigns that raise awareness about a specific cultural norm and its consequences and cause people to question that tradition. Such information campaigns can be carried out in a wide range of media – print, TV, radio and social media – or delivered by influencers. Governments have a central role to play in any such campaign. Research in this area however points to the importance of involving traditional leaders, particularly female leaders, in such campaigns, Muriaas et al. (2019). The trust in which traditional leaders are held and their ability to speak with experience and knowledge of the conditions and cultures of specific communities make them a powerful voice for change. This suggests that an approach that is tailored at the local (district) level to address the culture and behaviours of distinct communities may be the most likely to succeed.

And what about those who have already married as children?

In addition to trying to reduce the prevalence of child marriage, governments can develop policies to reduce the negative impacts of child marriage. The results presented in this report suggest that education and health care during pregnancy and childbirth are worthy of attention. Schools across the country routinely refuse to allow married girls and (sometimes) boys to attend school. Discussions with the Ministry of Education suggest this is not a function of existing regulations but is rather an implementation norm. Allowing married girls and boy to attend school could reduce the negative educational impact of early marriage. Programs that provide additional support to students with children (such as childcare) have been found to be successful in other contexts, Crean et al. (2001). Further, providing boys and girls with information and access to family planning options is vital to prevent the negative consequences is early pregnancy. Policies that encourage young

[18] They also tested an empowerment programme which provided girls with education support and life-skills. The empowerment program did not reduce the probability of child marriage or early pregnancy but increased the probability of women being in school at age 22 and being involved in income-generating activities.

Amin et al. (2016) note that the effect on the longer-term welfare of girls under these programs depends on the specific cultural norms. For example, in the context where marrying a young woman is desirable because she is more likely to be a virgin, girls who delay marrying until they are older may end up in a worse quality marriage with lower wellbeing.

mothers to attend antenatal check-ups and access a medically supervised birth would also reduce the negative impact associated with early marriage. Discussions conducted during the preparation of this report suggest that the stigma associated with being a very young mother may deter these mothers from seeking care. It may also be that their lesser say in household decisions may leave them unable to advocate for such medical care and to counter more traditional views of childbirth within the household.

Bureaucratic changes that make it easier for those who marry early to obtain marriage certificates (once they reach the legal marriageable age) and birth certificates for their children may also increase these families' ability to access education, social protection and other programs that can improve their welfare.

The array of negative consequences found in this study highlights the importance of efforts to abolish child marriage in Indonesia. At the time of writing, Indonesia and the rest of the world has been affected by COVID-19. COVID-19 has negatively affected the economic circumstances of many families. Economic hardship is one of the key drivers of child marriage. Girls living in poor families are hence currently at heightened risk of being married early. Efforts to provide economic support to these families are likely to generate large long-term gains in terms of shielding young, vulnerable girls and their children from the negative consequences flowing from child marriage.

To conclude, governments have a range of tools at their disposal to reduce the prevalence of child marriage and to reduce its consequences. Legislating against child marriage is a good start but is more effective when complemented by policies that assist families to educate, rather than marry, their young daughters and sons. Direct financial incentives to delay marriage can also assist, as can supporting families during difficult economic times (for example through access to credit). Policies to reduce child marriage need to consider the economic role of marriage and the crucial role of cultural norms. Information campaigns are vital for success. Greater community awareness of the consequences and costs, especially long-term costs, of child marriage is a key and necessary component of any concerted effort to change cultural norms around marriage for the benefit of individuals, families and society.

Bibliography

Adams, A., & Andrew, A. (2019). *Preferences and beliefs in the marriage market for young brides* (No. W19/05). IFS Working Papers.

Amin, S., Asadullah, N., Hossain, S., & Wahhaj, Z. (2016). *Can conditional transfers eradicate child marriage?* (No. 118). IZA Policy Paper.

Asadullah, M. N., Alim, A., Khatoon, F., & Chaudhury, N. (2016). Maternal Early Marriage and Cognitive Skills Development: An Intergenerational Analysis. In *WIDER Conference on Human Development and Growth, Helsinki*.

Ashraf, N., Bau, N., Nunn, N., & Voena, A. (2020). Bride price and female education. *Journal of Political Economy*, 128 (2), 591-641.

Au Yong Lyn, A. (2019). Prohibition without protection: Marriageable age law reforms and adolescent fertility in Mexico (No. 314). Ifo Working Paper.

Bajracharya, A., S. R. Psaki & M. Sadiq, Child marriage, adolescent pregnancy and school dropout in South Asia, report by the Population Council for the United Nations Children's Fund Regional Office for South Asia, Kathmandu, Nepal, 2019.

Bandiera, O., Buehren, N., Burgess, R., Goldstein, M., Gulesci, S., Rasul, I., & Sulaiman, M. (2020). Women's Empowerment in Action: Evidence from a Randomized Control Trial in Africa. *American Economic Journal: Applied Economics*, 12 (1): 210-59.

BPS (2016). Child Marriage in Indonesia: Progress in Pause. Research Brief. Accessed 5 May 2020, https://www.girlsnotbrides.org/resource-centre/unicef-indonesia-child-marriage-research-brief/

BPS (2017). Child Marriage in Indonesia (2013 and 2015). Report. Accessed 5 May 2020, https://www.bps.go.id/publication/2017/08/02/a89a2789e9ff45b2bc4e4cb5/child-marriage-in-indonesia--2013-and-2015-.html

BPS (2020) Pencegahan Perkawinan Anak Percepatan yang Tidak Bisa Ditunda, UNICEF – PUSKAPA. Report. Accessed 25 June 2020, https://puskapa.org/assets/uploads/2020/02/PUSKAPA-Child-Marriage-Report-FINAL-HIRES_compressed.pdf

Breierova, L., & Duflo, E. (2004). *The impact of education on fertility and child mortality: Do fathers really matter less than mothers?* (No. w10513). National bureau of economic research.

Buchmann, N., Field, E., Glennerster, R., Nazneen, S., Pimkina, S., & Sen, I. (2018). Power vs money: Alternative approaches to reducing child marriage in Bangladesh, a randomized control trial. *Unpublished Manuscript*.

Cameron, L., Contreras Suarez, D., & Rowell, W. (2019). Female Labour Force Participation in Indonesia: Why Has it Stalled? *Bulletin of Indonesian Economic Studies*, *55*(2), 157-192.

Cameron, L., Contreras Suarez, D. & Cornwell, K. (2019). Understanding the determinants of maternal mortality: An observational study using the Indonesian Population Census. *PloS one*, *14*(6).

Chari, A. V., Heath, R., Maertens, A., & Fatima, F. (2017). The causal effect of maternal age at marriage on child wellbeing: Evidence from India. *Journal of Development Economics*, *127*, 42-55.

Colleen Murray Gastón, Christina Misunas & Claudia Cappa (2019) Child marriage among boys: a global overview of available data, *Vulnerable Children and Youth Studies*, 14:3, 219-228.

Corno, L., Hildebrandt, N., & Voena, A. (forthcomming). Age of marriage, weather shocks, and the direction of marriage payments. *Econometrica*

Corno, L., & Voena, A. (2016). *Selling daughters: Age of marriage, income shocks and the bride price tradition* (No. W16/08). IFS Working Papers.

Crean, H. Hightower, A. and M. Allan (2001). School-based childcare for children of teen parents: evaluation of an urban program designed to keep young mothers in school. *Evaluation and Program Planning*, 24(3), August, 267-275.

Duflo, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. *American economic review*, *91*(4), 795-813.

Efevbera, Y., Bhabha, J., Farmer, P. E., & Fink, G. (2017). Girl child marriage as a risk factor for early childhood development and stunting. *Social Science & Medicine*, *185*, 91-101.

Fall, C. H., Sachdev, H. S., Osmond, C., Restrepo-Mendez, M. C., Victora, C., Martorell, R., ... & Bas, I. (2015). Association between maternal age at childbirth and child and adult outcomes in the offspring: a prospective study in five low-income and middle-income countries (COHORTS collaboration). *The Lancet Global Health*, *3*(7), e366-e377.

Field, E., & Ambrus, A. (2008). Early marriage, age of menarche, and female schooling attainment in Bangladesh. *Journal of political Economy*, *116*(5), 881-930.

Hertz, T., & Jayasundera, T. (2007). School construction and intergenerational mobility in Indonesia. *American University, Washington DC Department of Economics Working Paper Series*, (2007-18).

House of Representatives of the Republic of Indonesia. (2019). DPR Plenary Agrees to be 19 Years Old as the Minimum Age for Marriage. Retrieved from House of Representatives of the Republic of Indonesia:
http://www.dpr.go.id/berita/detail/id/25935/t/Paripurna+DPR+Sepakat+19+Tahun+Jadi+Batas+Usia+Minimal+Perkawinan

Jayawardana, D. (2019) Happily Ever After? Mental Health Effects of Early Marriage. Unpublished manuscript. University of Adelaide

Jensen, R., & Thornton, R. (2003). Early female marriage in the developing world. *Gender & Development*, *11*(2), 9-19.

John, N. A., Edmeades, J., & Murithi, L. (2019). Child marriage and psychological well-being in Niger and Ethiopia. *BMC public health*, *19*(1), 1029. https://doi.org/10.1186/s12889-019-7314-z

Mayor S. (2004) Pregnancy and childbirth are leading causes of death in teenage girls in developing countries. *BMJ*, 328 :1152

Muriaas, R., Wang, V., Bernstead, L. DUuani, B. and L.Rakner (2019). Why campaigns to stop child marriage can backfire. CMI Brief, No. 4, March, 1-4. Available at:

https://www.cmi.no/publications/file/6816-why-campaigns-to-stop-child-marriage-can-backfire.pdf

Murray Gaston, C., Misunas, C., & Cappa, C. (2019). Child marriage among boys: a global overview of. *Vulnerable Children and Youth Studies*, 219-228.

Nour, N. M. (2006). Health consequences of child marriage in Africa. *Emerging Infectious Diseases*, 1644-1649.

John, Raven J. (2003) Raven Progressive Matrices. In: McCallum R.S. (eds) Handbook of Nonverbal Assessment. Springer, Boston, MA

Rumble, L., Peterman, A., Irdiana, N., Triyana, M., & Minnick, E. (2018). An empirical exploration of female child marriage determinants in Indonesia. *BMC public health*, *18*(1), 407.

Sekhri, S., & Debnath, S. (2014). Intergenerational consequences of early age marriages of girls: Effect on children's human capital. *The Journal of Development Studies*, *50*(12), 1670-1686.

Strauss, J., Witoelar, F., & Sikoki, B. (2016). User's Guide for the Indonesia Family Life Survey, Wave 5. RAND.

UNICEF (2019) Investing in Knowledge for ending child marriage: Publications Catalogue 2018-2019. UNFPA-UNICEF. Report. Accessed 5 May 2020 https://www.unfpa.org/sites/default/files/resource-pdf/GP_2018-2019_Publications_Catalogue.pdf

World Bank. (2020, 01 10). The World Bank Data. Retrieved from https://data.worldbank.org

Yount, K. M., Crandall, A., Cheong, Y. F., Osypuk, T. L., Bates, L. M., Naved, R. T., & Schuler, S. R. (2016). Child marriage and intimate partner violence in rural Bangladesh: a longitudinal multilevel analysis. *Demography*, *53*(6), 1821-1852.

Zha, D. (2019). Schooling Expansion and the Female Marriage Age: Evidence from Indonesia. Working Paper, Columbia University.

Tables

Table 2: Effect of Child Marriage on Education Attainment

Dependent Variable: Educational Attainment (years)	(1)	(2)	(3)	(4)
Child Marriage	-3.20***	-2.06***	-1.61***	-0.65***
	(0.09)	(0.08)	(0.08)	(0.25)
Muslim		-0.53***	-0.58***	
		(0.16)	(0.20)	
Age (years)		-0.10***	-0.12***	-0.17***
		(0.00)	(0.00)	(0.03)
Paternal education (years)		0.40***	0.29***	
		(0.01)	(0.01)	
At age 12:				
Urban Area		0.78***	0.27***	-0.57
		(0.07)	(0.07)	(0.38)
Parents married		0.81***	0.73***	
		(0.08)	(0.09)	
Constant	9.94***	10.62***	12.09***	13.87***
	(0.09)	(0.23)	(0.27)	(0.92)
Observations	13,740	13,740	13,740	992
Fixed effects	-	Province	Village	Sisters
Mean dep. var.	9.11	9.11	9.11	8.05

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3) and at the family level in column (4). *** p<0.01, ** p<0.05, * p<0.1

Table 3: Effect of Child Marriage on Employment Outcomes

Dependent Variable:	Labour Force Participation					Formal Sector Employment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Child Marriage	-0.04***	-0.02***	-0.02***	0.00	0.06	-0.20***	-0.13***	-0.12***	-0.09***	-0.12**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.01)	(0.01)	(0.05)
Urban x Child Marriage				-0.06***	-0.07				-0.07***	0.08
				(0.01)	(0.05)				(0.02)	(0.08)
Urban Area		-0.08***			0.03		0.15***			0.06
		(0.01)			(0.05)		(0.01)			(0.08)
Muslim		-0.07***	0.00	0.01			0.01	-0.00	0.00	
		(0.01)	(0.01)	(0.02)			(0.01)	(0.02)	(0.02)	
Age (years)							-0.01***	-0.01***	-0.01***	-0.01**
							(0.00)	(0.00)	(0.00)	(0.00)
Paternal education (years)		0.00	0.00***	0.00***			0.01***	0.01***	0.01***	
		(0.00)	(0.00)	(0.00)			(0.00)	(0.00)	(0.00)	
Parents married (when age 12)		-0.00	-0.01	-0.01			0.02***	0.02**	0.02**	
		(0.01)	(0.01)	(0.01)			(0.01)	(0.01)	(0.01)	
Additional LFP Controls:										
Number of children under 5		-0.08***	-0.07***	-0.07***	-0.08***					
		(0.00)	(0.00)	(0.00)	(0.02)					
Partnered		-0.15***	-0.15***	-0.15***	-0.25***					
		(0.01)	(0.01)	(0.01)	(0.03)					
Constant	0.66***	0.70***	0.60***	0.60***	0.73***					0.55***
	(0.00)	(0.02)	(0.02)	(0.02)	(0.11)					(0.12)
Observations	38,120	38,120	38,120	38,120	2,420	24,489	24,489	24,489	24,489	1,435
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Village x Survey Wave	Sisters	-	Province x Survey Wave	Village x Survey Wave	Village x Survey Wave	Sisters
Mean dep. var.	0.64	0.64	0.64	0.64	0.59	0.34	0.34	0.34	0.34	0.33

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1) to (4), (6) to (9) and (11) to (14); and at the family level in columns (5), (10) and (15). *** p<0.01, ** p<0.05, * p<0.1. Specifications in columns (1)-(5) also included dummy variables for age in years.

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Table 3: Effect of Child Marriage on Employment Outcomes (Cont.)

Dependent Variable:	Log Hourly Wages			
	(11)	(12)	(13)	(14)
Child Marriage	-0.60***	-0.34***	-0.26***	-0.20***
	(0.03)	(0.03)	(0.04)	(0.05)
Urban x Child Marriage				-0.09
				(0.07)
Urban Area		0.15***		
		(0.03)		
Muslim		-0.33***	-0.21***	-0.21***
		(0.05)	(0.07)	(0.07)
Age (years)		0.01***	0.01***	0.01***
		(0.00)	(0.00)	(0.00)
Paternal education (years)		0.07***	0.06***	0.06***
		(0.00)	(0.00)	(0.00)
Parents married (when age 12)		0.17***	0.15***	0.15***
		(0.03)	(0.04)	(0.04)
Additional LFP Controls:				
Number of children under 5				
Partnered				
Constant	7.57***	6.66***	6.77***	6.76***
	(0.02)	(0.08)	(0.11)	(0.11)
Observations	8,756	8,756	8,756	8,756
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Village x Survey Wave
Mean dep. var.	7.44	7.44	7.44	7.44

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1) to (4), (6) to (9) and (11) to (14); and at the family level in columns (5) and (10). We do not present results for the sisters FE for log hourly wages as the sample size is too small. *** p<0.01, ** p<0.05, * p<0.1. Specifications in columns (1)-(5) also included dummy variables for age in years.

Table 4: Effect of Child Marriage on Per Capita Consumption

Dependent Variable: Log Per Capita Consumption	(1)	(2)	(3)	(4)
Child Marriage	-0.17***	-0.05***	-0.02*	-0.01
	(0.01)	(0.01)	(0.01)	(0.04)
Urban		0.19***		0.25***
		(0.01)		(0.06)
Muslim		-0.07***	-0.03	
		(0.03)	(0.03)	
Age (years)		0.00***	0.00***	0.00
		(0.00)	(0.00)	(0.00)
Paternal education (years)		0.04***	0.04***	
		(0.00)	(0.00)	
Parents married (when age 12)		0.07***	0.03***	
		(0.01)	(0.01)	
Constant	14.95***	14.45***	14.55***	12.63***
	(0.01)	(0.03)	(0.03)	(0.12)
Observations	29,642	29,642	29,642	2,584
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters
Mean dep. var.	14.9	14.9	14.9	15.1

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3) and at the family level in column (4). *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Effect of Child Marriage on Family Structure and Decision-Making

	(1)	(2)	(3)	(4)
A. Dependent Variable: Has marriage certificate				
Child Marriage	-0.07***	-0.05***	-0.02**	0.00
	(0.01)	(0.01)	(0.01)	(0.03)
Observations	10,199	10,199	10,199	980
Fixed effects	-	Province	Village	Sisters
Mean dep. var.	0.90	0.90	0.90	0.90
B. Dependent Variable: First marriage ended in divorce				
Child Marriage	0.04***	0.03***	0.03***	0.05*
	(0.01)	(0.01)	(0.01)	(0.03)
Observations	13,833	13,833	13,833	1,095
Fixed effects	-	Province	Village	Sisters
Mean dep. var.	0.05	0.05	0.05	0.08
C. Dependent Variable: Currently partnered				
Child Marriage	0.13***	0.11***	0.11***	0.19***
	(0.00)	(0.00)	(0.01)	(0.03)
Observations	39,816	39,816	39,816	2,586
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters
Mean dep. var.	0.80	0.80	0.80	0.76
D. Dependent Variable: Decision-making Index				
Child Marriage	-0.22***	-0.12***	-0.10***	-0.06
	(0.02)	(0.02)	(0.02)	(0.09)
Observations	24,989	24,989	24,989	1,726
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters
Mean dep. var.	3.5	3.5	3.5	3.4

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3) and at the family level in column (4). *** p<0.01, ** p<0.05, * p<0.1. Specifications in Columns (2) to (4) also included controls for Islamic religion, age, paternal education and whether parents were married when respondent was aged 12. Controls for urban locations were also included in Column (2). Column (4) only included controls for urban location and age.

Table 6: Fertility, Childbirth and Child Mortality

	(1)	(2)	(3)	(4)
A. Dependent Variable: Age at first birth				
Child Marriage	-4.13***	-3.71***	-3.43***	-3.62***
	(0.12)	(0.12)	(0.14)	(1.39)
Observations	7,082	7,082	7,082	448
Mean dep. var.	24.5	24.5	24.5	22.9
B. Dependent Variable: Number of Live Births				
Child Marriage	0.55***	0.53***	0.52***	0.40***
	(0.04)	(0.03)	(0.03)	(0.08)
Observations	12,501	12,501	12,501	883
Mean dep. var.	2.16	2.16	2.16	1.60
C. Dependent Variable: Number of pregnancy check-up visits				
Child Marriage	-1.04***	-0.59***	-0.42**	-1.04*
	(0.16)	(0.14)	(0.19)	(0.59)
Mean dep. var.	8.05	8.05	8.05	8.02
D. Dependent Variable: Took iron supplement during pregnancy				
Child Marriage	-0.09***	-0.06***	-0.07***	-0.07
	(0.01)	(0.01)	(0.02)	(0.05)
Mean dep. var.	0.78	0.78	0.78	0.56
E. Dependent Variable: Foetal height checked during pregnancy				
Child Marriage	-0.08***	-0.05***	-0.04*	-0.10
	(0.02)	(0.01)	(0.02)	(0.06)
Mean dep. var.	0.48	0.48	0.48	0.49
F. Dependent Variable: Foetal heartbeat checked during pregnancy				
Child Marriage	-0.10***	-0.06***	-0.05***	-0.11*
	(0.01)	(0.01)	(0.02)	(0.06)
Mean dep. var.	0.77	0.77	0.77	0.79
G. Dependent Variable: Had a blood test during pregnancy				
Child Marriage	-0.09***	-0.07***	-0.07***	-0.06
	(0.01)	(0.01)	(0.02)	(0.04)
Mean dep. var.	0.87	0.87	0.87	0.90
H. Dependent Variable: Mother weighed during pregnancy				
Child Marriage	-0.10***	-0.07***	-0.06***	-0.11**
	(0.01)	(0.01)	(0.02)	(0.05)
I. Dependent Variable: Mother's height measured during pregnancy				
Child Marriage	-0.07***	-0.05***	-0.04*	-0.06
	(0.02)	(0.02)	(0.02)	(0.07)
Mean dep. var.	0.46	0.46	0.46	0.44
Observations	9,090	9,090	9,090	837
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters

Table 6 (cont.): Fertility, Childbirth and Child Mortality

	(1)	(2)	(3)	(4)
J. Dependent Variable: Medically-supervised birth				
Child Marriage	-0.12***	-0.06***	-0.03*	-0.12**
	(0.01)	(0.01)	(0.01)	(0.06)
Observations	10,136	10,136	10,136	821
Mean dep. var.	0.71	0.71	0.71	0.57
K. Dependent Variable: Number of miscarriages				
Child Marriage	-0.009	0.006	0.011	0.029
	(0.010)	(0.010)	(0.012)	(0.049)
Observations	12,500	12,500	12,500	883
Mean dep. var.	0.18	0.18	0.18	0.14
L. Dependent Variable: Number of Still Births				
Child Marriage	0.005	0.003	0.005	-0.004
	(0.004)	(0.004)	(0.005)	(0.022)
Observations	12,500	12,500	12,500	883
Mean dep. var.	0.033	0.033	0.033	0.032
M. Dependent Variable: Under 1 Child Mortality				
Child Marriage	0.02***	0.01***	0.01**	
	(0.00)	(0.00)	(0.00)	
Observations	22,208	22,208	22,208	
Mean dep. var.	0.05	0.05	0.05	
N. Dependent Variable: Under 5 Child Mortality				
Child Marriage	0.03***	0.01***	0.01*	
	(0.00)	(0.00)	(0.01)	
Observations	22,208	22,208	22,208	
Mean dep. var.	0.07	0.07	0.07	
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3) and at the family level in column (4). *** p<0.01, ** p<0.05, * p<0.1. Specifications in Columns (2) to (4) also included controls for Islamic religion, age, paternal education and whether parents were married when respondent was aged 12. Panels K and L also include a control for years of potential fertility. Controls for urban locations were also included in Column (2). Column (4) only included controls for urban location and age.

Table 7: Effect of Child Marriage on Women's Health

	(1)	(2)	(3)	(4)
A. Dependent Variable: Self-Assessed Health (Good or very good)				
Child Marriage	-0.01***	-0.01**	-0.01	0.00
	(0.00)	(0.00)	(0.00)	(0.02)
Observations	38,196	38,196	38,196	2,445
Mean dep. var.	0.84	0.84	0.84	0.83
B. Dependent Variable: Mental Health				
Child Marriage	-0.003	-0.008	-0.001	-0.02
	(0.005)	(0.005)	(0.006)	(0.03)
Observations	22,873	22,873	22,873	1,837
Mean dep. var.	0.87	0.87	0.87	0.83
C. Dependent Variable: Anaemia				
Child Marriage	-0.01	-0.02***	-0.01**	-0.01
	(0.01)	(0.01)	(0.01)	(0.03)
Observations	33,843	33,843	33,843	2,369
Mean dep. var.	0.33	0.33	0.33	0.29
D. Dependent Variable: Underweight				
Child Marriage	-0.02***	-0.03***	-0.03***	-0.03*
	(0.00)	(0.00)	(0.00)	(0.02)
Observations	37,773	37,773	37,773	2,419
Mean dep. var.	0.10	0.10	0.10	0.10
E. Dependent Variable: Overweight				
Child Marriage	0.04***	0.04***	0.05***	0.08***
	(0.01)	(0.01)	(0.01)	(0.02)
Observations	37,773	37,773	37,773	2,419
Mean dep. var.	0.32	0.32	0.32	0.30
F. Dependent Variable: Subjective wellbeing index (standardised)				
Child Marriage	-1.060***	-0.860***	-0.735***	-0.994**
	(0.123)	(0.119)	(0.141)	(0.448)
Observations	12,885	12,885	12,885	1,305
Mean dep. var.	0.00	0.00	0.00	-0.43
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Sisters

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3) and at the family level in column (4). *** p<0.01, ** p<0.05, * p<0.1. Specifications in Columns (2) to (4) also included controls for Islamic religion, age, paternal education and whether parents were married when respondent was aged 12. Controls for urban locations were also included in Column (2). Column (4) only included controls for urban location and age. There are fewer observations for mental health as these questions were only asked in IFLS5 and IFLS-East.

Table 8: Child Health, Cognitive Ability and Education

	(1)	(2)	(3)
A. Dependent Variable: Has birth certificate (0 to 18 years old)			
Child Marriage	-0.09***	-0.08***	-0.07***
	(0.01)	(0.01)	(0.01)
Observations	13,530	13,530	13,530
Mean dep. var.	0.85	0.85	0.85
B. Dependent Variable: Weight-for-age			
Child Marriage	-0.14***	-0.05**	-0.05
	(0.03)	(0.03)	(0.04)
Observations	10,291	10,291	10,291
Mean dep. var.	-0.92	-0.92	-0.92
C. Dependent Variable: Underweight			
Child Marriage	0.04***	0.01	0.02
	(0.01)	(0.01)	(0.01)
Observations	10,291	10,291	10,291
Mean dep. var.	0.19	0.19	0.19
D. Dependent Variable: Height-for-age			
Child Marriage	-0.20***	-0.12***	-0.11**
	(0.03)	(0.03)	(0.04)
Observations	10,291	10,291	10,291
Mean dep. var.	-1.21	-1.21	-1.21
E. Dependent Variable: Stunting			
Child Marriage	0.07***	0.05***	0.04***
	(0.01)	(0.01)	(0.01)
Observations	10,291	10,291	10,291
Mean dep. var.	0.32	0.32	0.32
F. Dependent Variable: Ravens test results (standardised, 7-14 years old)			
Child Marriage	-0.16***	-0.12***	-0.12***
	(0.03)	(0.03)	(0.04)
Observations	5,633	5,633	5,633
Mean dep. var.	0.00	0.00	0.00
G. Dependent Variable: Boys' Years of Education (aged 18+)			
Child Marriage	-0.92***	-0.35***	-0.15
	(0.13)	(0.12)	(0.14)
Observations	4,304	4,304	4,304
Mean dep. var.	10.34	10.34	10.34
H. Dependent Variable: Girls' Years of Education (aged 18+)			
Child Marriage	-0.99***	-0.40***	-0.11
	(0.13)	(0.12)	(0.14)
Observations	4,342	4,342	4,342
Mean dep. var.	10.61	10.61	10.61
Fixed effects	-	Province x Survey Wave	Village x Survey Wave

Standard errors in parentheses. Standard errors are clustered at the village level in Columns (1)-(3). *** p<0.01, ** p<0.05, * p<0.1. Specifications in Columns (2) and (3) also included controls for Islamic religion, gender of the child, age of the child, maternal grandfather's education and whether the maternal grandparents were married when mother was aged 12. Controls for urban locations were also included in Column (2).

Table 9: Impacts of Child Marriage for Men

	(1)	(2)	(3)	(4)
A. Dependent Variable: Educational Attainment (years)				
Child Marriage	-3.39***	-2.36***	-1.81***	
	(0.16)	(0.14)	(0.17)	
Observations	11,823	11,823	11,823	
Mean dep. var.	9.65	9.65	9.65	
Fixed effects	-	Province	Village	
B. Dependent Variable: Labour Force Participation				
Child Marriage	0.03***	0.01***	0.01**	0.01
	(0.00)	(0.00)	(0.00)	(0.00)
Urban x Child Marriage				0.00
				(0.01)
Observations	31,053	31,053	31,053	31,053
Mean dep. var.	0.95	0.95	0.95	0.95
C. Dependent Variable: Formal Sector				
Child Marriage	-0.17***	-0.08***	-0.06***	
	(0.01)	(0.01)	(0.01)	
Observations	29,665	29,665	29,665	
Mean dep. var.	0.45	0.45	0.45	
D. Dependent Variable: Log hourly wages				
Child Marriage	-0.32***	-0.24***	-0.18***	
	(0.03)	(0.03)	(0.04)	
Observations	14,750	14,750	14,750	
Mean dep. var.	7.62	7.62	7.62	
E. Dependent Variable: Log Per Capita Consumption				
Child Marriage	-0.17***	-0.06***	-0.04**	
	(0.02)	(0.02)	(0.02)	
Observations	24,783	24,783	24,783	
Mean dep. var.	14.93	14.93	14.93	
F. Dependent Variable: First marriage ended in divorce				
Child Marriage	0.06***	0.06***	0.05***	
	(0.01)	(0.01)	(0.01)	
Observations	11,931	11,931	11,931	
Mean dep. var.	0.03	0.03	0.03	
G. Dependent Variable: Currently Partnered				
Child Marriage	0.19***	0.11***	0.10***	
	(0.01)	(0.01)	(0.01)	
Observations	33,204	33,204	33,204	
Mean dep. var.	0.77	0.77	0.77	
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Village x Survey Wave

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Table 9: Impacts of Child Marriage for Men (Cont.)

	(1)	(2)	(3)	(4)
H. Dependent Variable: Decision-making Index (0-5)				
Child Marriage	-0.17***	-0.11***	-0.08**	
	(0.03)	(0.03)	(0.04)	
Observations	21,562	21,562	21,562	
Mean dep. var.	3.37	3.37	3.37	
I. Dependent Variable: Self-assessed health (Good or very good)				
Child Marriage	-0.02***	-0.01	-0.01	
	(0.01)	(0.01)	(0.01)	
Observations	31,006	31,006	31,006	
Mean dep. var.	0.88	0.88	0.88	
J. Dependent Variable: Underweight				
Child Marriage	-0.01	-0.01	-0.00	
	(0.01)	(0.01)	(0.01)	
Observations	30,296	30,296	30,296	
Mean dep var.	0.13	0.13	0.13	
K. Dependent Variable: Overweight				
Child Marriage	-0.03***	-0.01	-0.01	
	(0.01)	(0.01)	(0.01)	
Observations	30,296	30,296	30,296	
Mean dep. var.	0.18	0.18	0.18	
L. Dependent Variable: Mental health				
Child Marriage	0.000	-0.005	-0.002	
	(0.009)	(0.009)	(0.011)	
Observations	19,288	19,288	19,288	
Mean dep. var.	0.88	0.88	0.88	
M. Dependent Variable: Subjective wellbeing index (standardised)				
Child Marriage	-1.410***	-1.193***	-0.922***	
	(0.256)	(0.236)	(0.293)	
Observations	9,912	9,912	9,912	
Mean dep. var.	0.00	0.00	0.00	
Fixed effects	-	Province x Survey Wave	Village x Survey Wave	Village x Survey Wave

Standard errors in parentheses. Standard errors are clustered at the village level. *** p<0.01, ** p<0.05, * p<0.1.
All specifications include the same controls as in the specifications above for women.

Table 10: Effect of Different "Types" of Child Marriage

Dependent Variable:	Education (Years)	Labour Force Particip.	Formal Sector	Log hourly earnings	Log per cap. Cons.
Child Marriage	-1.54***	-0.08	-0.11***	-0.26***	-0.01
	(0.09)	(0.11)	(0.01)	(0.05)	(0.01)
Both spouses married early	-0.45**	-0.02*	0.01	0.04	-0.05**
	(0.18)	(0.01)	(0.01)	(0.15)	(0.02)
Observations	10,044	28,901	18,068	5,756	29,642
Mean Dep Var.	8.97	0.62	0.30	7.4	14.9
Fixed Effects	Village	Village x Survey Wave	Village x Survey Wave	Village x Survey Wave	Village x Survey Wave

Dependent Variable:	Divorce	Decision-making Index	Age at First Birth	No. of live births	Subjective wellbeing index
Child Marriage	0.01***	-0.10***	-3.25***	0.472***	-0.745***
	(0.00)	(0.02)	(0.16)	(0.036)	(0.166)
Both spouses married early	-0.02*	-0.05	-0.12	0.274**	-0.421
	(0.01)	(0.04)	(0.40)	(0.107)	(0.326)
Observations	10,123	22,143	5,709	10,159	11,189
Mean Dep Var.	0.014	3.54	24.6	2.09	0.08
Fixed Effects	Village	Village x Survey Wave	Village	Village	Village x Survey Wave

Dependent Variable:	Marriage certificate	Underweight	Stunting	Son's education (Years)	Daughter's education (Years)
Child Marriage	-0.02*	0.01	0.04***	-0.25	-0.07
	(0.01)	(0.01)	(0.02)	(0.26)	(0.23)
Both spouses married early	-0.07**	0.03	-0.01	-1.04	-1.16***
	(0.03)	(0.03)	(0.03)	(0.68)	(0.43)
Observations	8501	10,291	10,291	2,115	2,568
Mean Dep Var.	0.91	0.19	0.32	10.04	10.15
Fixed Effects	Village	Village x Survey Wave	Village x Survey Wave	Village x Survey Wave	Village x Survey Wave

Standard errors (clustered at the village level) in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All specification include the same controls as in previous specifications with the same dependent variable.

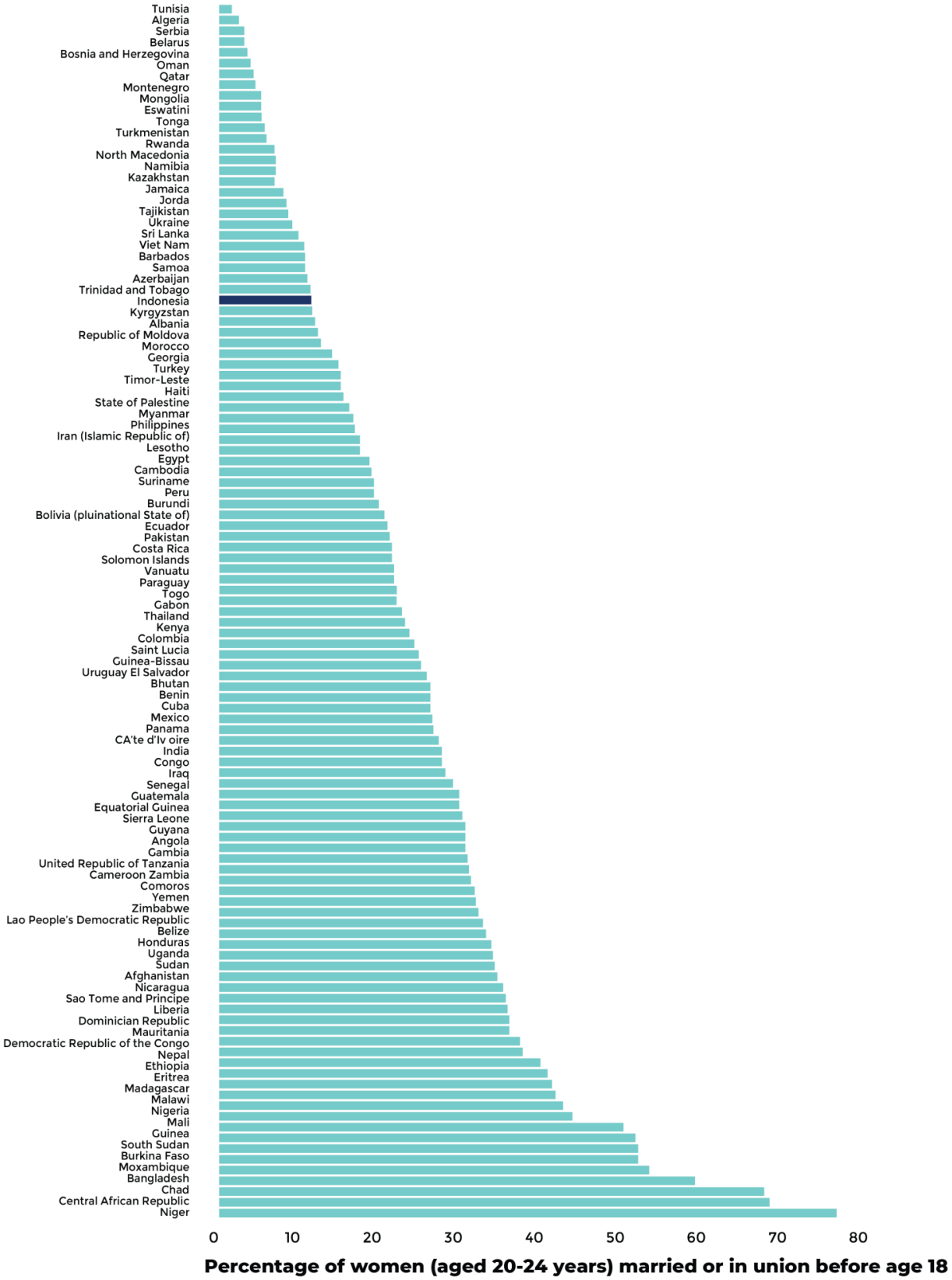
Appendix:

Appendix A: Prevalence of Child Marriage

	Female		Male	
Bali	0.161	(0.368)	0.0395	(0.195)
Central Java	0.236	(0.425)	0.0305	(0.172)
DI Yogyakarta	0.115	(0.319)	0.0164	(0.127)
DKI Jakarta	0.182	(0.386)	0.0245	(0.155)
East Java	0.279	(0.448)	0.0435	(0.204)
East Kalimantan	0.332	(0.471)	0.0681	(0.252)
East Nusa Tenggara	0.190	(0.393)	0.0567	(0.232)
Lampung	0.333	(0.472)	0.0420	(0.201)
Maluku	0.256	(0.437)	0.102	(0.303)
North Maluku	0.228	(0.420)	0.0693	(0.254)
North Sumatra	0.172	(0.378)	0.0321	(0.176)
Papua	0.324	(0.469)	0.0986	(0.299)
South Kalimantan	0.353	(0.478)	0.0703	(0.256)
South Sulawesi	0.211	(0.408)	0.0459	(0.209)
South Sumatra	0.275	(0.447)	0.0748	(0.263)
Sulawesi Tenggara	0.407	(0.492)	0.134	(0.342)
West Java	0.289	(0.454)	0.0453	(0.208)
West Nusa Tenggara	0.209	(0.407)	0.0640	(0.245)
West Papua	0.337	(0.473)	0.115	(0.320)
West Sumatra	0.167	(0.373)	0.0161	(0.126)
Total	0.290	(0.454)	0.0841	(0.277)

Standard errors in parentheses.

Appendix B: Proportion of women age 20-24 married, before 18 years of age



Source UNICEF. Data Warehouse [Internet]. UNICEF DATA. [cited 2020 Jan 26]. Available from: https://data.unicef.org/resources/data_explorer/unicef_f/Data for Indonesia are derived from the Susenas (2018). Data for other countries range from 2010 - 2018 onwards.